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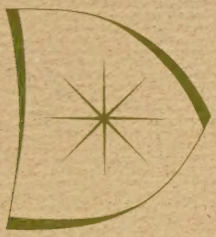

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SEA-POWER IN THE PACIFIC

SEA-POWER IN THE PACIFIC

A STUDY OF THE AMERICAN-JAPANESE NAVAL PROBLEM

BY

HECTOR C. BYWATER

(ASSOCIATE OF INST. NAV. ARCH.)

WITH 4 MAPS AND A CHART

BOSTON AND NEW YORK
HOUGHTON MIFFLIN COMPANY
1921

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PREFACE

THE widespread interest evoked by recent developments in the political relations of the United States and Japan will doubtless be considered sufficient justification for a book which deals mainly with the naval resources of those two Powers and the strategical problems likely to arise in the unhappy event of an armed conflict for the mastery of the Pacific. It was necessary to preface the naval chapters by a brief review of the principal questions at issue between the Governments of the United States and Japan, and whilst I have endeavoured to present both sides of the case impartially, it would be too much to hope that my interpretation of the rival aims and policies will command general agreement. Both in Japan and the United States there appear to exist parties who believe that war is the only solvent of the differences which have grown up between the two nations during the last twenty years, and a certain section of the Press in both countries has lately indulged in language suggestive of a common desire to apply this drastic remedy without further delay. People who hold such views, be they American or Japanese, will find no encouragement in the ensuing pages. On the contrary, they may learn that the war to which they profess to look forward with confidence,

and even with enthusiasm, would be a terrible and protracted struggle, so full of novel elements and uncertainties that those who have studied the matter most carefully are the least disposed to predict the ultimate issue. This book will have achieved its purpose if it stimulates discussion on the naval outlook in the Pacific Ocean, and thus helps to bring to light certain facts concerning the strategical situation of the rival Powers the full significance of which does not appear to be realised either in Japan or the United States. Such modest influence as it may exert will therefore be in the direction of peace rather than of war.

Many of the data relating to the ships, dockyards, and *personnel* of the two Navies are new, and no trouble has been spared to ensure completeness and accuracy. Wherever possible, official publications and documents have been drawn upon. In this respect I am under a special obligation to the Washington Navy Department, which placed a large amount of official literature at my disposal. I am indebted also to Captain S. Kobayashi, C.B., the Japanese Naval Attaché in London, and to Lieutenant-Commander K. Kurokawa, Assistant Naval Attaché, for kindly supplying me with valuable notes on the administration, organisation, and *personnel* of the Imperial Japanese Navy. Several correspondents resident in Japan have forwarded useful material, and I have to thank one of these gentlemen for interesting and original details of the submarine service—a branch of the Japanese Navy

about which very little has previously been written. The particulars of Japanese resources for shipbuilding and the production of war material, which have been gleaned from many quarters, are believed to give the fullest and most accurate survey of this subject which has yet appeared.

Among the authorities consulted for information on the political and economic affairs discussed in the volume are: *The Japan Year Book, 1919-20*, and *Returns of the Foreign Commerce and Trade of Japan*, both published at Tokyo; *Japan at the Cross Roads*, by Mr. A. M. Pooley; *Modern Japan*, by Mr. W. M. McGovern; *Dai Nippon, Betrachtungen über Gross-Japans Wehrkraft, Weltstellung und Zukunft*, by Herr Karl Haushofer (Berlin, 1914); *The Fight for the Republic in China*, by Mr. B. L. Putnam Weale; *Japan in World Politics*, by Mr. K. K. Kawakami; and, for the history of the Asiatic immigration controversy, various American books, periodicals, and official documents.

For details of American and Japanese warships use has been made of the material in *Fighting Ships*, 1919, 1920, and earlier editions; the German naval annuals *Nauticus* and *Taschenbuch der Kriegsflotten* down to the year 1914; the official American *Navy Year Book* and *Ships' Data, U.S. Naval Vessels*; *The Modern History of Warships*, by Professor William Hovgaard; a large number of extracts from Japanese books, magazines, and newspapers, to translations of which I was given access; and the British and American technical

Press. In a few cases ship descriptions have been taken from articles contributed by me to *The Engineer*, *The Naval and Military Record*, and *The United Service Magazine*, to the editors of which the usual acknowledgments are due.

For the conclusions which have been arrived at in the chapters on Pacific strategy and the possible features of a naval campaign in that area I must accept full and undivided responsibility. In the preparation of these chapters the information as to naval bases and stations given in papers read by Vice-Admiral A. P. Niblack, U.S.N., in 1915 and 1916, before the American Society of Naval Architects and Engineers, was found of the utmost value.

H. C. BYWATER.

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CHAPTER I

A NEW ERA OF NAVAL POWER: THE GRAVITATION FROM WEST TO EAST

When the German High Sea Fleet surrendered for internment on the 21st of November 1918, a brief but pregnant chapter in the history of sea-power was brought to a close. The next chapter may be said to have opened in August 1919, with the passage of the newly created United States Pacific Fleet through the Panama Canal *en route* to its base in San Francisco Bay. By the disappearance of the German Navy the strategical situation throughout the globe was profoundly modified. Since the year 1900, when the rapid expansion of German naval armaments compelled Great Britain to set about the reduction of her outlying squadrons with a view to mustering her full strength in home waters, the North Sea had been the prospective battle-ground of the two mightiest fleets in the world. The Mediterranean, so long the main frontier of Britain, now became of secondary importance, and shortly before the outbreak of war her interests in that sea were entrusted to a force that included three battle-cruisers but not a single battleship. In the Far East, where the crushing defeat of Russia at the hands of Japan and Britain's alliance with the latter Power had relieved her of the necessity of maintaining a great naval establishment, only a modest force of cruisers and smaller vessels was left, together

with one old battleship in reserve at Hong-Kong. A few cruising ships were still serving on the other foreign stations, but with these minor exceptions the entire effective strength of the Navy had been concentrated in or adjacent to the North Sea.

Such was the general situation during the ten years previous to the war. That tremendous aggregation of naval power known as the Grand Fleet included practically all the efficient fighting material of the British Navy, and throughout the war period it continued to absorb the great majority of the new vessels as they left the builders' yards. The fact that the Grand Fleet proved adequate to ensure British supremacy in the main strategical theatre, where weakness would have invited defeat and consequent disaster, is sufficient justification for the policy which had been pursued, since 1904, of reducing the foreign service squadrons almost to vanishing point in order to render possible this overwhelming concentration. There was, indeed, no alternative save the inflation of naval expenditure to an intolerable degree. The course adopted left the outposts of the Empire imperfectly guarded, but such risks as this entailed simply had to be accepted. At the present time, however, when the control of the North Sea is no longer in dispute, and when nothing in the nature of a challenge to her supremacy is discernible in Europe, Great Britain is free—so far as financial exigencies permit—to reorganise her naval policy on lines more in harmony with the requirements of Imperial, as opposed to local, defence. The initial steps in this direction were taken very soon after the conclusion of peace. In December 1918 the Grand Fleet ceased

to exist as such. Approximately two-thirds of the battleships of which it had been composed were laid up in reserve. The remainder, representing the latest and most powerful additions to the Navy, were formed into four Battle Squadrons, of which the First and Second were assigned to the Atlantic Fleet, the Third was attached to the Home Fleet, and the Fourth was sent to the Mediterranean.

It was not long, however, before this arrangement was found to impose too heavy a strain on the national finances, and it was accordingly amended by suppressing the Home Fleet, which was placed on a reserve basis. As a result, the Atlantic Fleet is now the only fully commissioned fleet on the Home Station, the boundaries of which extend northward to the Arctic Seas, southward nearly to the Cape Verde Islands, and westward as far as Greenland. The entire North Sea and the Baltic are, of course, included in this station. Under the amended scheme of distribution the Atlantic Fleet consists of two battle squadrons, numbering ten battleships in all; one battle-cruiser squadron of four ships; two light-cruiser squadrons, each of five ships; four destroyer flotillas, with a total of about seventy boats; and some thirty submarines, divided into three flotillas. The Fleet includes also a number of auxiliary vessels, such as minelayers, aircraft carriers, repair ships, and depot ships. So far as its principal units are concerned, it is a remarkably homogeneous command. Only two types are present among the ten battleships, and even then the difference is merely one of speed; in armament and protection the ten battleships are virtually identical. There is less uniformity in the Battle-Cruiser Squadron, which is made up of the *Hood*, the sister ships

Renown and *Repulse*, and the *Tiger*. Had the original programme of construction been realised there would by now have been four ships of the *Hood* class; but the other three ships of this group, *Anson*, *Rodney*, and *Howe*, were cancelled shortly after the conclusion of hostilities. But even as at present constituted the squadron is a formidable force, combining great gun-power with a collective speed of at least 29 knots. The light-cruisers, destroyers, and submarines incorporated in the Atlantic Fleet are, without exception, of modern design and thoroughly efficient.

Notwithstanding the wholesale reductions which have been effected since the end of the war, the commissioned force now on the Home Station is much stronger than the old Channel Fleet of 1900, when the attitude of France still dominated the strategical outlook. At that date only eight battleships were immediately available north of Gibraltar, and there was a decided shortage in home waters of effective cruisers and torpedo-craft. On the other hand, the Mediterranean Fleet of to-day is considerably less powerful than that of twenty years ago. Besides the Fourth Battle Squadron of six ships, very similar in type and all armed with 13·5-in. guns, it contains one light-cruiser squadron and a destroyer flotilla. With Malta as the chief base, the Mediterranean Station extends from Gibraltar to the Straits of Bab-el-Mandeb, and thus takes in the whole of the Mediterranean and the Red Sea, with the Black Sea and the Sea of Azoff as subsidiary spheres of activity. The present strength of this Fleet has been largely dictated by the political situation in the Near East. In case of emergency it can, of course, be reinforced at short notice by vessels from the

Atlantic Fleet, as was done early in 1920, when the First Battle Squadron was despatched to the Mediterranean and remained there several months, co-operating with the permanent Fleet against the Turkish Nationalists under Mustapha Kemal. Whilst the strategical significance of the Mediterranean is naturally influenced by the fluctuations of the political barometer, the safety of this main highway to the East, along which passes a very large percentage of British sea-borne trade, can never be a matter of indifference to the Empire. In considering the dimensions of the Fleet now maintained in those waters, due regard must be paid to the contemporary naval establishments of the other Mediterranean Powers. Since the closing years of the nineteenth century the naval power of France has declined, both relatively and absolutely. England's chief rival at that period, she dropped out of the competition some fifteen years ago, when the growing rivalry between Great Britain and Germany had already begun to involve an expenditure beyond her powers of financial endurance, and since then she has contented herself with a fleet of unassuming proportions. During the war it suffered heavy losses, which the national industry, fully occupied as it was in meeting the demands of the Army, was unable to replace. France, therefore, emerged from the struggle with her naval strength seriously diminished, and with a deficit in material which has been only partially balanced by the acquisition of five ex-German light-cruisers and ten destroyers. Although her future naval policy has not yet been definitely settled, there are indications that she has renounced the idea of constructing a great battle fleet. For the time being, at least, she has suspended

the building of armoured ships, which would impose too severe a strain upon her depleted resources. Five vessels of this type were laid down in 1913-14, but upon the outbreak of war all work on them was countermanded, and subsequently it was decided not to proceed with any of these vessels. In consequence of this decision the French Navy for several years to come will include only seven battleships of the Dreadnought type, and four of this number are armed with 12-in. guns. Judged by modern tactical standards the entire French Battle Fleet is probably inferior to the British squadron at Malta, the disparity being accentuated by the limited number of modern light-cruisers in the French Navy. It is, however, a debatable point whether strength in armoured ships is still the safest criterion of naval power in such comparatively restricted waters as those of the Mediterranean. An influential body of opinion in France has lately been advocating the multiplication of submarines and aircraft rather than the building of large armoured warships, which, it is contended, are prohibitively expensive and dangerously vulnerable. Whether these views are endorsed or rejected by the French naval authorities is not yet apparent, but the fact remains that of the several post-war programmes tentatively drafted in Paris none makes provision for ships above the light-cruiser category.

The future of French naval policy will naturally be influenced by the trend of events in Italy. As long as that country remained a partner in the old Triple Alliance, her naval preparations could not be disregarded either by Great Britain or France. In those days the aim of Italy, as avowed by her statesmen, was to create a fleet which should make

her the valued ally of a stronger Power; and it was, therefore, a not unreasonable inference that the expansion of her Fleet might ultimately benefit Germany and Austria-Hungary. The present position of Italy is fundamentally different. Her chief maritime concern is to secure and consolidate her enlarged interests in the Adriatic, which has become *il mare nostra* in a more literal sense than the most sanguine Irredentist dared to anticipate. The Austro-Hungarian Navy no longer exists. During the war it proved wholly unworthy of the traditions bequeathed to it by Tegetthoff, and incidentally its conduct went far to confirm the view of those shrewd observers who always declared the battle of Lissa to have been the triumph of a personality rather than of a nation. Thanks to the elimination of the Austrian menace, Italy is no longer constrained to spend vast sums on naval armaments. Her Government has lately followed the example of France in discontinuing work on several unfinished armoured ships, and in limiting its programme to small material. The war losses incurred by Italy were serious, including as they did one Dreadnought and four older armoured vessels. They have been compensated in part by the taking over of ex-enemy cruisers and destroyers, but the net loss of tonnage remains fairly heavy. The Italian Ministry of Marine, in a statement issued in 1920, intimated that no ambitious naval projects were contemplated for the near future. The majority of the shipbuilding contracts entered into during the war had been annulled, and work was proceeding only on a few destroyers and submarines. During the next few years, therefore, the strength of the Italian Navy will not be augmented by armoured vessels. The

five Dreadnought battleships it contains, being armed only with 12-in. guns, are not of the latest type, and individually do not compare favourably with the seven French battleships of this class.

From the foregoing résumé it will be seen that naval development in Europe has to all intents come to a standstill. Whether the pause will be of long or brief duration depends on a number of circumstances. If precedent counts for aught, a resumption of warship building activity in one country would speedily be followed by the introduction of new programmes elsewhere. Not the least remarkable among the phenomena which accompanied the intensive period of Anglo-German rivalry at sea was the impetus which this movement gave to naval competition the world over. Never before had such feverish industry been witnessed in the shipyards and arsenals of Europe, America, and Asia. With hardly an exception, the maritime Powers of every degree were building warships to the limit of their financial and industrial resources. The process of action and reaction was initiated when Germany commenced building against Great Britain, who was compelled in self-defence to put forth a yet greater effort in the same direction. Obedient to the promptings of her German mentors, Austria-Hungary occupied herself with the construction of a formidable fleet; whereupon Italy, alarmed for her position in the Adriatic, lost no time in reinforcing her own Navy. Confronted with these urgent preparations on the part of her neighbours in the Mediterranean, France had no option but to follow suit, and was the more disposed to improve her position at sea because the rapid increase of German naval power represented a potential threat to her Channel ports.

Russia, who could not be expected to stand idly by whilst the Baltic became a German lake, astonished enemies and friends alike by the magnitude of the naval plans which she formulated in 1908-10. Had not the war supervened, the Russian Navy might at this date have constituted an imposing factor in the general scheme of strategy ; but defeat and anarchy have reduced it to such a condition of inefficiency that its present significance is quite negligible. Meanwhile, for reasons less obvious but not beyond elucidation, the naval epidemic was spreading to Turkey, Greece, Spain, Holland, and the Scandinavian countries, in all of which there was a simultaneous awakening to the necessity, real or imagined, for stronger naval armaments.

As we have said, the movement was not confined to Europe. Desirous of maintaining its status in the hierarchy of Naval Powers, the United States of America determined upon a radical departure from the policy which had governed its naval preparations during the preceding decade. The plans of the Government, however, did not at first meet with popular approval. Congress threw cold water on a series of projects submitted by the Navy Department, and continued to limit its appropriations to two battleships per annum. It was not until the European War had been raging for two years that public opinion in the United States could be persuaded into making more generous provision for naval defence. Once the necessity was realised, however, there was an end to hesitation and parsimony. In August 1916, a Navy Bill of dimensions unparalleled in American history was submitted to Congress and passed by large majorities. This measure, which had been preceded by a well-

organised and vigorous campaign in favour of 'national preparedness,' will be detailed and analysed in a later chapter; here it need only be said that the Act covered a period of three years and authorised the laying down within that period of an entire fleet, including sixteen armoured vessels of the largest type, ten cruisers, and a host of torpedo-craft, submarines, and auxiliaries. Owing to the subsequent entry of the United States into the war, the Act of 1916 has undergone a series of modifications, the cumulative effect of which has been to enlarge its provisions very considerably. Early in 1919 a second three-year programme of approximately the same character was brought in by the then Secretary of the Navy, Mr. Daniels, with the strong support of President Wilson. This Bill was conceived with the avowed purpose of giving the United States 'the largest Navy in the world.' It called for a new squadron of capital ships, six light-cruisers, and a number of smaller vessels, the total of new construction being sixty-nine vessels, with an estimated cost of £40,000,000. But neither the eloquence of Mr. Daniels nor the repeated messages from President Wilson, then in Europe, urging that the possession of an all-powerful Navy would make the United States the guardian of the world's peace, could induce Congress to accept the new Bill. Several members of the House Committee which considered the measure and recommended its rejection pointed out that the eventual primacy of the American Navy was already secured by earlier programmes. If strength in capital ships is still the main criterion of sea-power, it is unquestionably true that by 1923, or 1924 at latest, the United States Fleet will have become the most powerful in the

world. At that date the actual number of capital ships—by which is meant battleships and battle-cruisers of the all-big-gun type—owned by the United States may be smaller by two or three units than the corresponding total of the British Navy, but this slight inferiority in numbers will be more than balanced by the superior individual power of the American ships. Mr. Britten, a member of Congress, recently prepared a statement in which the future relative position of the two navies in respect of tonnage and gun-power is very clearly shown. Forecasting the position in 1923, he assumes that the United States will then have thirty-three capital ships of all classes, as against the British total of thirty-five. On examining these figures he finds that the American ships have a total displacement of 1,118,650 tons as compared with the British total of 884,100 tons, showing an American superiority of 234,550 tons, or an advantage of no less than 8638 tons per ship. In average speed of all vessels the two fleets will be practically equal, but the position as to weight of gunfire will be very different. Counting only the main armaments, Mr. Britten finds that there will be 340 American guns to 314 British, with an average of 10·3 big guns per ship in the American Fleet and 8·97 guns per ship in the British Fleet. But the guns of the former will average 14½ inches in calibre against 13⅔ inches on the British side, 'and this would appear to give us a tremendous advantage in weight of steel thrown at one broadside, when we will hurl 548,400 lb. against 452,000 lb. discharged by all the British heavy guns.' In secondary armaments the disparity, he finds, will be much greater.

Without exploring here a maze of figures which are

better relegated to the ship tables in the appendix, it may be observed that the conclusions reached by Mr. Britten are correct in the main. On the basis of modern armoured vessels completed, building, and authorised, the British Navy has already declined to second rank. And in this connection it is important to note that the modern armoured vessel—the capital ship—remains, in the deliberate opinion of the British Admiralty, the unit on which sea-power is built up. In their judgment, no superiority in fast cruisers, submarines, or aircraft will compensate for a deficiency in capital ships. This authoritative pronouncement renders particularly significant a comparison between the British and American battle fleets as they will exist in 1924. By then the latter will contain sixteen ships of greater individual power than any type represented in the British Navy, whether weight of gunfire, armour protection, or speed be accepted as the prime element of efficiency. Taking the *Royal Sovereign* as the strongest British battleship likely to be in service a few years hence, we may usefully compare her features with those of the American battleship *Indiana*, due to be completed in 1923. The *Royal Sovereign* has a displacement of 25,750 tons, a speed of 22 to 23 knots, and her offensive power is vested in an armament of eight 15-in. guns, fourteen 6-in. guns, and four torpedo tubes. Her thickest armour, limited to the waterline and the main gun positions, is 13 in. The weight of metal discharged at a full broadside from the heavy guns amounts to 15,360 lb. The *Indiana* displaces 43,200 tons, her designed speed is 23 knots, and she is armed with twelve 16-in. guns, sixteen 6-in. guns, and two torpedo tubes. Over the vital parts of the ship, such as the water-

line and the main gun positions, there is 16-in. armour. At each broadside from the principal guns she throws a total weight of 25,200 lb. Measured by any standard of material, the superiority of the American ship is overwhelming. Great Britain possesses five ships of the *Royal Sovereign* class and five of the *Queen Elizabeth* class, the latter differing only on the score of superior speed. Failing the construction of new vessels, these ten ships will remain the backbone of the British Navy. The United States, on the other hand, has six ships of the *Indiana* class, and four of the *Maryland* class—a type rather less powerful than the *Indiana*, but superior to the *Royal Sovereign*—and at least seven other battleships equal in fighting value to the best British type.

A comparison of battle-cruiser strength affords a yet more striking proof of the decline of British naval power. The latest and best ship of this type in the Royal Navy is the *Hood*. She has a displacement of 41,200 tons, a designed speed of 31 knots, and an armament of eight 15-in. and twelve 5·5-in. guns. At each broadside from the heavy guns she throws 15,360 lb. of metal. The United States is constructing six battle-cruisers of uniform dimensions, the particulars of which are: displacement, 43,500 tons; designed speed, 33¼ knots; armament, eight 16-in. and sixteen 6-in. guns. The weight of metal discharged from the heavy guns of each vessel is 16,800 lb. The *Hood* has a possible advantage in respect of armour protection, but as the details of this feature in the American ships are not yet known it is unsafe to assume that they will be less capable of resisting attack. The above figures are impressive enough as they stand, but they do not tell the

whole story. Comparisons of weight of gunfire which leave out of consideration the ballistics of the weapons enumerated are apt to be misleading. For instance, the 16-in. 50 calibre gun with which the later American ships are to be armed is very much more powerful than the British 15-in. gun of 42 or 45 calibres; not only does it fire a heavier projectile, but the increased muzzle velocity due to greater length of bore confers a higher degree of range, accuracy, and penetration. The superiority of the American weapon would be specially marked in an action fought at long range, and since it is a generally accepted view that future engagements between capital ships will rarely, if ever, be fought at distances below 15,000 yards, the heavier and longer guns of the American Fleet would give it an advantage difficult to reduce to any arithmetical formula.

Since the 12-in. gun is no longer considered equal to tactical requirements of the near future, capital ships armed with this gun have ceased to be reckoned as first-class fighting units. It is permissible, therefore, to divide modern capital ships into three categories:—1st class, comprising those armed with guns of 15-in. calibre and above; 2nd class, those armed with guns of 13·5-in. or 14-in. calibre; 3rd class, ships mounting no guns heavier than 12-in. Adopting this classification, the respective position of the British and American battle fleets in 1923-24 may be set forth as follows:

British Fleet: 1st class, 13 ships; 2nd class, 15 ships; 3rd class, 6 ships.

United States Fleet: 1st class, 16 ships; 2nd class, 11 ships; 3rd class, 8 ships.

The only class of ship in which the British Navy has, and is likely to maintain, a large margin of superiority is the light-cruiser. Owing to the liberal programmes of construction carried into effect during the war period, the establishment of cruisers has been powerfully reinforced. Leaving out of calculation a number of these vessels which will probably have been removed from the active list on the score of age or deterioration, the British Navy of 1923-24 will include about forty light-cruisers against an American total of ten. It should, however, be observed that American naval opinion differs from British in attaching only a very limited importance to the light-cruiser. According to the American view, the development of wireless telegraphy, of airships and aeroplanes, and of the large ocean-going destroyer, now enables reconnaissance work at sea to be performed effectually without the aid of cruisers. Whether this view takes sufficiently into account the immensity of the areas in which the American Fleet may be called upon to wage war is a debatable point. In relatively restricted theatres of operations, such as the North Sea, the Mediterranean, or the Caribbean, it might be feasible to maintain an effective system of reconnaissance and observation by means of aircraft, destroyers, and submarines; but in the vast spaces of the Pacific Ocean the problem of efficient scouting would become infinitely more difficult of solution.

As early as 1906 the naval expenditure of Japan had begun to show a notable increase. The estimates for that year were three times as much as those for 1905, and thereafter the curve of expenditure went steadily up, the pace being accelerated during the war period owing to the intervention of

Japan in August 1914 as an active belligerent. In 1918 the naval budget had reached a total of £25,000,000, a 30 per cent. increase over the previous year; and in 1920 a sum of no less than £50,000,000 was demanded for the naval service. Due largely to the peculiar budget methods practised in Japan, it is exceedingly difficult to determine the exact scope and nature of her naval commitments at any given moment; but the Minister of Marine informed the Budget Committee of the Diet, in July 1920, that the programme he then submitted involved the provision of four battleships, four battle-cruisers, and 'twelve cruisers and smaller craft.' The cost, he added, would be 680,000,000 yen, equivalent to £68,000,000 at par; but it has since been stated that this sum is to be spread over several years. Even so, it is undoubtedly startling to learn that Japan is contemplating the expenditure of such a gigantic sum on naval armaments, nor is the effect mitigated by the Minister's assurance that the programme was not directed against any potential enemy but dictated by the country's insular position, 'although the possibility of the despatch of foreign strength to the Orient had not been disregarded.' It is very certain that no other nation at the present time is spending so large a part of its revenue on naval preparations. The proportion, indeed, is so abnormal that it has evoked strong protests from the Japanese newspapers, which now demand enlightenment as to the reasons which impel the Government to spend money so lavishly on new battleships. A memorandum setting forth the principles that governed naval policy was published at Tokyo in 1917. The ultimate aim, it explained, was to realise the so-called 'eight-eight' system,

that is to say, squadrons each consisting of eight battleships and eight battle-cruisers, and to create in time at least three squadrons of this composition. The building of such a powerful fleet is no new ambition ; it was suggested as long ago as 1906, and would doubtless have been attained before now but for the chronic embarrassments of the national exchequer. A particularly acute observer of affairs in that country has well said that the Japanese Navy is not out of proportion to its defensive and political requirements, but it is out of proportion to the resources of the State. The same observer points out, as a fact worthy of note, that the successive naval programmes of Japan have been principally directed towards the building of a very powerful battle squadron, and not, as might have been expected, to the multiplication of fast cruisers, a procedure that implies the belief that one day she will have to fight for the supremacy of the Pacific.

As far back as 1912 Paymaster-Inspector-General Katagiri wrote a series of articles for the Tokyo Press, severely criticising the system of naval administration then in vogue. In his opinion the Japanese Navy was heavily overmanned, the number of *personnel* in 1912 being from twice to three times as large as that of the British Navy in proportion to the respective tonnage totals. He urged the adoption of the reservist and nucleus crew system as a means of curtailing expenditure, but there is no evidence that this advice has been followed by the naval authorities. In remarking that the Navy estimates of that period represented about 35 per cent. of the total national expenditure, General Katagiri pointed out that the burden of the Fleet on the nation was about twenty times greater in

proportion to that of the British Fleet on the British nation. In the Japanese Army enormous numbers of men were kept with the colours in time of peace merely to imitate the great standing armies of Europe. However large the Navy and Army might be, both, he added, were useless unless there was the necessary financial backing to send them out to war.

Apart from considerations of finance, there are factors which augur none too well for the attainment of the 'eight-eight' standard within the measurable future. Since the close of the Great War, shipbuilding in Japan has been seriously hampered by the difficulty of obtaining steel. During the war large quantities of steel were imported from the United States under a special agreement between the two Governments, but the signing of the Armistice put an end to this arrangement, and the imports of American steel have since been very limited. So serious has the shortage become of late that the output of tonnage in Japan during 1920 was 25 per cent. short of the forecast of 800,000 tons which had been made in January of that year. This scarcity of steel reacted on the naval programme, delaying the launch and completion of ships.[1] When the war-time boom in mercantile shipbuilding was at its height new shipyards sprang up in every Japanese port with mushroom-like rapidity. A month before the Armistice no fewer than seventy yards were at work in the Osaka district alone, a number that had dwindled to twenty before the

[1] The question of steel supplies in Japan is examined at greater length in Chapter VI. It is considered possible that a new process of utilising the volcanic ores in the Japanese islands may eventually make the country self-supporting as regards steel.

end of 1920. The domestic supply of steel, limited as it is, was gravely prejudiced at the beginning of 1920 by an act of sabotage perpetrated at the Yawata works, the only concern in Japan which is capable of producing large quantities of steel. Fortunately, however, the damage proved to be less extensive than the first reports had indicated. An additional factor tending to retard the output of tonnage, naval as well as mercantile, is the higher rate of wages demanded by the shipyard workers. In 1916 the average daily wage of a Japanese shipwright was about 2s. The present day average is doubtful, but it is certainly much higher, and fresh claims are continually being made on behalf of the workers.

Whatever the actual motives of the Japanese Government may be in diverting so abnormal a percentage of the revenue to naval preparations, it is very certain that nothing short of a profound belief in the necessity for a powerful Fleet would induce the people to sustain the crushing burden of taxation which this policy imposes on them. In 1916 one of the semi-official Japanese journals gave what purported to be an accurate summary of the national attitude on naval policy. 'Heavy as are the current demands for the Navy,' it wrote, 'no true patriot will consider them excessive. To impute aggressive motives to us is unjust. Our Fleet is not a sword but a shield; its function is not offensive, but defensive. No State in the world, with the exception of Britain, is so dependent as Japan upon the strength of her Navy, and every argument that the British use to justify the preservation of their naval supremacy applies with undiminished weight to the case of Japan. As an Island Empire our

frontiers are the sea, and if we cannot defend them we shall assuredly become the prey of foreign enemies. We are not a rich people; our wealth is strictly limited, and every item of expenditure must be, and is, scrutinised with care before being approved. Save in time of war the Army estimates have invariably been criticised, and often reduced as a result of public opposition. But up to now the case of the Navy has been different. With implicit faith in the judgment of its experts, the Japanese nation has accepted, almost without demur, every demand that has been made on behalf of the Fleet.[1] Men who do not consider it incompatible with patriotism to oppose a large military Budget will often be found voting readily for the needs of the Fleet. When the cost of the Army has to be met there is no hesitation in cutting out a division here and there, but each new battleship is accepted almost without debate. Be the burden what it may, the people of Japan will continue cheerfully to make sacrifices for the Navy so long as they believe it to be the one vital guarantee of their country's safety and welfare.' Judging, however, by the newspaper protests to which allusion has been made, the nation is growing less tolerant of this prodigal outlay on naval armaments.

Previous to the arrival in August 1919, of the new United States Pacific Fleet, the Japanese, so far as sea-power went, were in undisputed control of that ocean. How completely the balance of naval power in the Far East has altered since the dawn of the century may be gauged by the fact that in 1900 Great Britain maintained a China Fleet which included

[1] This statement does not wholly accord with the facts. During the past fifteen years there have been many protests, both in the Japanese Diet and Press, against the inordinate demands of the naval authorities.

six battleships, six first-class cruisers, and the same number of second-class cruisers. Russia, too, was strongly represented in that area, whither she had for years been sending her best and latest men-of-war. At that period, therefore, Hong-Kong, Port Arthur, and Vladivostok formed the bases of powerful fleets, and the Japanese Navy was by no means predominant even in its own waters. But with the defeat of Russia in 1905 British naval policy in the Far East underwent a radical change. The battle fleet was withdrawn and its place taken by a cruiser force of limited strength. Germany, a newcomer to the China Seas, maintained a similar squadron at Tsingtau, and French interests were represented by a few ships of no particular fighting value stationed at Saigon. Following the acquisition of the Philippine Islands in 1899, the United States evinced some anxiety to strengthen her position in the Pacific, and for a time even considered the project of dividing its naval forces into two equal fleets, one of which was to remain permanently in that ocean. Admiral Mahan, it is interesting to recall, severely criticised this proposal. ' When the Senate,' he wrote, ' passed the recommendation to divide our battle fleet between our Atlantic and Pacific coasts, not four years had elapsed since the Russian Fleet had been destroyed by the Japanese, owing chiefly to its being divided between the Baltic and Asiatic coasts of Russia.' He considered such a division to be permissible only when each part should be superior to any probable enemy, or when, by secure tenure of a central position, they could join in time to present a united mass. The American naval authorities believe that both conditions have now been fulfilled. By means of the Panama Canal the Pacific and

Atlantic Fleets are brought within supporting distance of each other, and the present strength of the Pacific Fleet, irrespective of subsequent reinforcements, is such as to make it little if at all inferior to the only 'probable enemy.' At the end of 1920 this Fleet consisted of 14 battleships, including 8 Dreadnoughts; 7 light-cruisers, the majority of obsolete type; 108 destroyers, 14 submarines, and the usual auxiliary craft, the whole representing a total of 192 vessels with an aggregate displacement of 789,996 tons, exclusive of submarine displacements. In the Philippines and Far Eastern waters generally there has hitherto been no great display of American naval power. The permanent Asiatic Fleet is limited to one armoured and three protected cruisers, all of obsolete design; together with a few gunboats and auxiliary vessels. Incidentally the composition of this squadron is open to grave objection in view of local strategical conditions. None of the ships is powerful enough to fight or fast enough to escape from a battle-cruiser, and the destruction of the entire American Asiatic Squadron would not improbably prove to be one of the first events of a war with Japan.

When arranging the post-war distribution of the British Navy, the Admiralty did not overlook the Far East. The China Station, the limits of which from east to west cover nearly one-fourth of the circumference of the globe, and extend from the Equator to the Arctic Circle, is at present occupied by the Fifth Light-Cruiser Squadron and twelve submarines, besides a large contingent of gunboats and sloops. With one exception the cruisers are small, though fast and well-armed vessels; but the

flagship *Hawkins*, which is much larger, is speedy enough to evade the attentions of any battle-cruiser completed to date, while her remarkably powerful armament would make her a dangerous antagonist to ships of a lesser category. The twelve submarines attached to the squadron are all of recent construction and very efficient design. Notwithstanding the absence of armoured ships, the British force at present on the China Station is therefore a factor to be reckoned with. Since, moreover, the protection of British interests in the Far East is a concern of the whole Empire, the naval resources of the Dominions must naturally be included in every estimate of the sea-power available within that area. The project of re-establishing a British Pacific Fleet on the basis of Dominion co-operation, first raised at the Imperial Conference of 1909, but delayed by the supervention of the German menace which culminated in the Great War, is certain to be revived in the near future. According to the original scheme, this Pacific Fleet was to consist of three units in the East Indies, Australia, and China Seas, each comprising, with some variations, a battle-cruiser, three light-cruisers, six destroyers, and three submarines. The battle-cruiser *New Zealand*, built at the cost of the Dominion whose name she bears, was intended to serve on the China Station, and was only diverted to the North Sea in consequence of the growing danger from Germany. Concerning Australia, the Admiralty's suggestion was that with some temporary assistance from Imperial funds the Commonwealth Government should provide and maintain the Australian and Pacific Fleet. New Zealand's contribution was to go towards the upkeep of the China unit, certain of the smaller vessels of that

force having New Zealand ports as their headquarters.

As regards Canada, it was considered that her long seaboard fronting two oceans rendered the provision of a Fleet unit of the same pattern unsuitable at that period. Canada, therefore, was invited to make a start by providing herself with light-cruisers and ocean-going destroyers, part of the ships to be stationed on the Atlantic Coast and part on the Pacific. Owing, however, to a variety of causes no definite plan of Imperial defence had been evolved up to the outbreak of war. A few months after the Armistice, Lord Jellicoe was appointed to visit the Dominions with a view to conferring with the respective Governments on this question. The reports which he submitted as a result of this tour have not yet been published *in extenso*, but from the summaries available he appears to have advocated the revival of the former scheme for creating a powerful Far Eastern Fleet, embracing vessels of the Royal Navy, the East Indian Squadron, and the Australian, New Zealand, and Canadian Navies. The Fleet, he suggests, should include at least eight modern battleships, eight battle-cruisers, ten light-cruisers, forty destroyers, and thirty-six submarines, at a total cost for maintenance of £19,750,000 per annum, of which sum the Dominions would contribute approximately three-fifths. This scheme will very probably form one of the principal subjects for discussion at the Imperial Conference of 1921.

In the meantime Australia, New Zealand, and Canada have each mapped out a temporary naval programme to meet the requirements of the immediate future. Australia has greatly reduced her

naval establishments by laying up the older ships and limiting the strength of the commissioned Fleet to two light-cruisers, one of which is to be employed on training duty only; two sloops, six destroyers, and six submarines. Of the remaining vessels, the battle-cruiser *Australia* and the light-cruiser *Melbourne* have been reduced to nucleus crews. The former is to be employed as a gunnery and torpedo drillship, and the *Melbourne* as flagship. The *personnel* does not now exceed 5000, but a sufficient reserve exists to provide complements for all the serviceable ships of the Royal Australian Navy. Canadian naval affairs were greatly to the fore during 1920. In that year the Canadian Fleet was demobilised, in order, according to the Minister of Marine, to clear the ground for a complete reorganisation of the service. In place of the antiquated cruisers *Niobe* and *Rainbow*, the Fleet now consists of the comparatively modern light-cruiser *Aurora* and two destroyers, all three vessels having been presented to Canada by the Home Government. They are to be manned for the most part by Canadian officers and men, and the idea is that they shall cruise alternately on the Atlantic and Pacific coasts. In outlining these arrangements the Minister of Marine added: 'It is sincerely to be hoped that Canada, as a result of the next Imperial Conference, will adopt a permanent naval policy for keeping her position as a self-governing nation within the Empire. Apart from sentimental or other considerations, we should take measures to ensure that our long coastline, as well as our mercantile marine, is amply protected.' The post-war Fleet of New Zealand is confined at present to the fairly modern light-cruiser *Chatham* and a much older cruising ship,

the *Philomel*. That Dominion, it is understood, was invited to maintain the battle-cruiser *New Zealand* in her own waters; but the offer could not be accepted, chiefly for reasons of economy. In any case the presence of this ship would have done little to improve the naval position of the British Empire in the Pacific, for her present-day fighting value is small in comparison with that of the huge battle-cruisers now being added to the fleets of other Pacific Powers.

There has been no clearer exposition of the problem of British Imperial defence than that given by Admiral of the Fleet Earl Beatty, in a series of public addresses delivered since the war. Speaking at a London gathering in June 1920, he said that the first and most important lesson taught by the late struggle was that the co-operation of the Dominions must form an integral part of Imperial naval defence. To say that the safety of the Empire depends upon the security of its communications was a platitude that would bear repeating. The control of those communications was the main problem of Imperial defence. Each of the Dominions could exercise such control in its own maritime areas, and, at the same time, give protection to its coastal trade. But the creation of a navy, he continued, is not limited to the building of ships. It involves also the provision of trained officers and men, the development and the defence of naval bases—especially of stations where ships may repair and re-fuel—and finally the establishment of yards, arsenals, and engineering establishments where ships of war may be built, armed, and equipped. 'Every member of the great confederation of States which together make up the Empire

is affected equally by sea-power. Therefore, I trust, and ask, that all those members of the Empire shall put away their parochial views, and shall look at the problem as a whole, recognising that if disaster befall one unit it affects the whole Empire. I ask them to remember that we are a family of States, of the same blood and the same interests. Surely it is not beyond the powers of progressive and wise statesmanship to devise means by which it will be possible for each and all of the members of this great Empire to bear a share of the cost of preserving it—to devise a scheme of naval defence, equitable and just, in accordance with our relative populations and commitments; remembering that the Navy is an insurance for our continued prosperity and the sure shield behind which the Empire can go forward.'

The gravitation of naval power from West to East, from the Atlantic to the Pacific, is an event which promises to make the defence of the Empire an issue no less urgent and vital than at any previous period of its existence. To the people of Australia and New Zealand the provision of adequate defences in the Pacific is the chief concern of the moment. They are as ready to make sacrifices to secure this protection as were the people of Great Britain to maintain their supremacy in the North Sea during the days of the German peril. It is therefore a complete error to suppose that the defeat of Germany has absolved the Empire from the duty of keeping up a great Navy. British interests in the Far East are at least as extensive and weighty as those of the United States, which Power has already deemed it expedient to transfer half its naval force from the Atlantic to the Pacific seaboard. The extent to which American apprehension is justified in regard

to the trend of Japanese policy will be discussed in the ensuing chapters of this work ; but it is desirable at this point to emphasise the fact that the British peoples cannot be indifferent spectators of an attempt on the part of any foreign Power to establish an absolute mastery of the Pacific Ocean.

CHAPTER II

JAPAN AND THE UNITED STATES: QUESTIONS AT ISSUE

In order to trace the causes which have led up to what the more sober organs of the American Press have lately been describing as 'a dire and ominous situation' in the Pacific Ocean it is not necessary to go back further than 1898. In that year the United States formally annexed the Hawaiian or Sandwich Islands, and thus established her first advanced outpost in the Pacific Ocean. In the opinion of Admiral Mahan, the acquisition of Hawaii was inspired by motives of defence; the islands were regarded as a bulwark against aggression rather than as stepping-stones to further advance beyond the Pacific. Sea-power, as its great exponent has said, is but the handmaid of expansion; its begetter and preserver. American strategical policy up to the war with Spain had been dominated by the 'purely defensive ideas inherited from the earlier days of our national existence. The Antilles, Cuba, the Isthmus, and Hawaii were up to that time simply outposts—positions—where it was increasingly evident that influences might be established dangerous to the United States as she then was. Such influences must be forestalled; if not by immediate action, at least by a definite policy.' In Japan the annexation of Hawaii was viewed with marked disfavour, and something of an outcry was raised by

the Press, which became still more excited when, in April of the following year, the Philippine Islands were ceded by Spain to the United States under the treaty of peace. It was reported at the time that the Japanese Government had notified Washington of its inability to acquiesce in this sudden thrusting forward of American influence right across the Pacific; but, be this as it may, Japan was faced with an accomplished fact, and she very wisely refrained from giving a more forcible expression to her disapproval. Why the passing of Hawaii under the American flag should have evoked so much feeling in Japan is not at all clear. It was manifestly impossible for her to claim any special interest in the islands on the score of geographical propinquity, considering that they lie some 4400 miles from her coast. Indeed, her attitude in this affair was held by many foreign observers to confirm the suspicion that she cherished far-reaching schemes of expansion in the Pacific, and that Hawaii had been marked down as an integral part of the future Japanese Empire. Geographically there was, of course, more reason for her displeasure at the annexation of the Philippines, on which occasion the Press indulged in such violent language that the Government, apprehensive of the effect on American opinion, saw fit to make public announcement of the satisfaction it felt at the spread of American influence, 'so fruitful of benefit to the human race,' in the Western Pacific. Nevertheless, from this time forward the relations between Japan and the United States were characterised by a coolness all the more noticeable in view of the warm friendship which up to then had united the two countries. Japan had never forgotten that she owed her admission into the comity of civilised nations and her subse-

quent rise to prosperity and power mainly to the United States. It was Commodore Perry, an American naval officer, who in 1853 had sailed with his 'black ships' into Tokyo Bay, bearing a friendly message from the President of the United States to the Shogun. This event led to the re-establishment of intercourse between Japan and the outer world, setting a period to the state of isolation, extending over more than two centuries, in which the country had hitherto existed. The United States was the first Power to appoint a consular representative in Japan and the first to negotiate a treaty with that country. Practically every native historian of modern Japan has paid ungrudging tribute to the benevolent attitude of America throughout the difficult years in which the former was emerging from her long seclusion and preparing to play her part in world affairs on a footing of equality with the Great Powers. Yet, by the irony of fate, it was from America that the national pride of Japan received its first affront.

During the early years of the present century there was a steady flow of emigration from Japan. China absorbed the greater part of this surplus population, but a considerable number of Japanese crossed the Pacific to seek their fortunes in America, which they had been taught to regard as a land of boundless opportunities.[1] By 1908 Japanese

[1] The following figures show the number of Japanese immigrants arriving each year in the United States during the last twenty-seven years :—

1893....1,380	1900....12,635	1907....30,226	1914.... 8,929
1894....1,931	1901.... 5,269	1908.... 5,803	1915.... 8,613
1895....1,150	1902....14,270	1909.... 3,111	1916.... 8,680
1896....1,110	1903....19,968	1910.... 2,720	1917.... 8,991
1897....1,526	1904....14,264	1911.... 4,520	1918....10,231
1898....2,230	1905....10,331	1912.... 6,136	1919....10,064
1899....2,844	1906....13,835	1913.... 8,281	

Total.....219,048

colonies, more or less numerous, had been founded in the territories bordering the Pacific Coast. California had the largest quota, but Washington, Oregon, and British Columbia also received a not inconsiderable number of Japanese immigrants. In the beginning they were welcomed on account of their frugal and industrious habits, but more especially because they provided a supply of cheap labour. They were soon in great demand as domestic servants, factory hands, agricultural labourers, etc., and in whatever capacity they served they did their work well for rates of pay very much lower than those which prevailed in the case of white labour. Notwithstanding his modest remuneration, however, the average Japanese immigrant found no difficulty in saving money. Accustomed as he was to a simple diet, of which rice and fish were the staple constituents, and to living quarters of the most primitive description, he could support himself and his family in comfort on an income that would have meant sheer starvation to a white labourer. The result was that in no long time the erstwhile immigrant had blossomed forth into a capitalist, who more often than not invested his savings in land. In this way some of the most fertile tracts along the Pacific slope became studded with small Japanese holdings, and it was observed with surprise that in nearly every case the land so occupied was cultivated on highly scientific principles. But the transition from menial employment to the status of landowner made little or no difference in the personal habits of the Japanese colonist. His standard of living was still exceedingly low so far as expenditure was concerned, but it was obviously wholesome and sufficient, for he worked fully as hard and often twice as long

as his white neighbours, and yet appeared to thrive on the process. Had the Japanese farmer been content with his small holding his presence would doubtless have been tolerated, if not welcomed, by the agrarian community. But as a general rule this was not so. His profits were utilised to purchase more land, until the original few acres had developed into an estate of no mean proportions. It is difficult to obtain reliable statistics of the total area of land now under Japanese control in California, Oregon, and Washington, but according to recent statements in the Californian Legislature, the amount of rich irrigated land actually owned or leased by Japanese is in some counties as much as from 50 to 75 per cent.

It is scarcely necessary to remark that not every Japanese immigrant becomes prosperous enough to buy land. On the contrary, a large proportion of them continue as labourers and artisans, proving formidable competitors to the American workman. The first organised protest in California against the unrestricted admittance of Japanese immigrants was made in 1900 at a public meeting in San Francisco. Some very violent speeches were delivered, and the newspapers took the matter up for a time; but the agitation gradually subsided, and was not revived until 1904, when the American Federation of Labour adopted resolutions urging the permanent exclusion of Japanese nationals from the United States. Similar resolutions were passed at the annual meetings of the Federation in 1905 and 1906. Matters seemed to be coming to a head in 1905, in which year hundreds of labour, municipal, and political organisations throughout the Pacific States followed the lead of the Labour Federation in demanding legislative action against the Japanese

immigrants. A number of associations were founded at this time to gain national support for the exclusion policy, the largest of these being the Asiatic Exclusion League, which claimed a membership of nearly 250,000. In 1908, when it became known that negotiations were proceeding between the Governments of Washington and Tokyo with a view to regulating the immigration question and other points at issue, the Asiatic Exclusion League presented to Congress a petition which was said to embody the views of an overwhelming majority of the population on the Pacific slope. The petition opened with an energetic protest against the conclusion of any agreement which would empower the ruler of a foreign nation to make stipulations as to what number and class of persons should leave the said foreign country for the purpose of emigrating to the United States. It went on to condemn any such agreement as subversive of the traditions and policies of the United States, and as a betrayal of the rights of American citizens. The employment of Asiatics on board ships flying the American flag was characterised as a violation of American law, the sanctity of which Congress was exhorted to uphold. Protest was made, further, against the continuance of Asiatic immigration on the following grounds: (1) that such immigrants came into the country entirely ignorant of the national sentiments and incapable of discharging the duties of American citizenship; (2) that the introduction of this incongruous and non-assimilable element into the life of the nation would inevitably impair and degrade its most cherished institutions. The presence of Asiatics was held to exercise a debasing and contaminating influence on the social

life of the community as a whole. Moreover—and this was the gravamen of the complaint—their low standard of living and their readiness to accept paltry wages made them most formidable rivals of the American working classes. A more exalted note was struck in the closing passages of this petition, which read as follows: 'The presence in our midst of a large body of Asiatics, the greater number of whom are armed, loyal to their governments, entertaining feelings of distrust, if not of hostility, towards our people; owning no allegiance to our Government or our institutions; not sustaining American life in time of peace, and ever ready to respond to the cause of their own race in time of war,—render these Asiatics an appalling menace to the American Republic.'

Several years before this the Legislature of California had passed a resolution urging the exclusion of the Japanese, and again, in 1905, both the Senate and the Assembly declared by unanimous vote that 'unrestricted Japanese immigration is a menace to the State.' After the disastrous San Francisco earthquake of 1906 the Board of Education of that city decided to exclude Japanese boys from the schools, on the pretext of insufficient accommodation. This act was a direct contravention of existing treaties between the United States and Japan, yet it was nevertheless upheld and declared to be constitutional by the Supreme Court of California. Remonstrances from the Federal authorities at Washington had no effect, nor did the Californians show any signs of penitence when they were rebuked by President Roosevelt in his message of December 1906. On the contrary, this rebuke drew a vigorous reply from the Governor of the

State. 'It is evident,' he said, 'that the President when he penned that portion of his message in which he referred to the treatment of the Japanese in the San Francisco schools, was not aware of the conditions on this coast, especially in California. The President does not understand the racial differences between the Japanese and Chinese on the one hand, and people of Caucasian blood on the other. Were the differences in civilisation, thought, manners, and customs less profound, such inhospitableness as our people might show toward them would insensibly disappear. It is, however, useless to expect that persons of such a totally different civilisation can ever mix with us and become absorbed in our body politic. They cannot become good American citizens; it is useless to attempt to make them such.'

All this ferment in the West placed the Federal Government at Washington in a position of some embarrassment. It could not endorse the drastic restrictions favoured by the legislative bodies of the Pacific States without seriously prejudicing its relations with Japan; nor, indeed, did it manifest any particular sympathy with the extreme views which prevailed in those States on the subject of Asiatic immigration. But it was realised that unless precautionary measures were taken a grave crisis might at any moment be precipitated by some act of violence committed against Japanese nationals in California. The situation was therefore somewhat delicate, but it was handled with consummate tact by President Roosevelt and the Secretary of State, Mr. Elihu Root. In 1908 a treaty of commerce and navigation was signed, and this was followed by an exchange of notes, reaffirming the common desire of both countries to encourage the

free and peaceful development of their commerce on the Pacific Ocean, to respect each other's territorial interests in that ocean, to support by all peaceful means the independence and integrity of China and the principle of the 'open door.' But the real importance of this exchange of notes lay in the conversations which had preceded it, in the course of which the Japanese Government pledged itself to exercise control over the emigration of labourers with a view to easing the difficult position that had arisen in California. The significance of this pledge, which has become widely known as the 'Gentlemen's Agreement,' was recently explained by a Japanese authority.[1]

'In 1908 the School Board of San Francisco decided to segregate Japanese children. This action the Japanese residing in America, the Japanese Government, and the people resented. In connection with this, strong opposition to Japanese immigration manifested itself on the Pacific coast. So threatening was the agitation that legislation prohibiting Japanese labour immigration was imminent. To avert the enactment of these laws, which the Japanese considered humiliating, they, in the "Gentlemen's Agreement," undertook to satisfy America by regulating immigration. It may be asked why America should think of excluding the Japanese, or what right she had to do so. When the treaties were revised in 1894 America expressly reserved the right to legislate on questions relating to immigration. At that time comparatively few Japanese had crossed over to America, but the Chinese question had in its adjustment caused much trouble, and America carefully guarded her rights against the day when the Japanese might begin to crowd the Pacific States. The Japanese may have imagined the time would never come when that

[1] *The Japan Year Book*, Tokyo, 1919-20.

clause would be called into service, but it was a powerful weapon in the hands of American legislators, and the "Gentlemen's Agreement" could not but be most welcome to Japan. Three years later (1911), when the treaty between Japan and America expired, this question, of course, had to be confronted, and was disposed of in the following way: The objectionable clause in the treaty of 1894 reserving the right to legislate on immigration restriction does not appear in the new treaty, nor is mention made of it in the body of the treaty. It was, however, appended to the treaty as a protocol. When the treaty came before the Senate for ratification, the following declaration by the Japanese Ambassador was read: "In proceeding this day to the signature of a treaty of commerce and navigation, the undersigned has the honour to declare that the Imperial Japanese Government are fully prepared to maintain with equal effectiveness the limitation and control which they have for the past three years exercised in respect of labour emigration to the United States." Without this declaration, or its equivalent, the Senate would have rejected the Treaty.'

The gratification which the Federal authorities felt at this apparent settlement of an awkward dispute was not shared on the Pacific Coast. There it was contended—and by all accounts with good reason—that the control which the Japanese Government had promised to exercise led to no perceptible falling off in the number of immigrants. Many of them did not travel direct to the United States, but came instead to Canada or Mexico, whence they were smuggled across the frontier. This illicit form of immigration led in 1912 and 1913 to further outbursts of popular anger, which culminated in the enactment of a law inhibiting Japanese nationals from owning landed property within the borders of California. They were permitted to lease land for

agricultural purposes for a term not exceeding three years, but it was expressly provided that any real property and interest therein acquired in violation of the Act should escheat to the State. This measure, known as the Webb Act, evoked a sharp protest from Japan. Probably in deference to urgent representations from the Federal Government, it does not appear as yet to have been enforced, at least in the retrospective sense. Should this be done at any future time it is difficult to see how grave developments can be avoided. Public sympathy in Japan is unreservedly on the side of the immigrants, whose wrongs furnish the Press with a never-ending theme for discussion and indignant comment. It is worthy of note that the organs in closest touch with official sources have been the least restrained in their denunciation of American policy. Nor is this a matter for surprise in view of recent utterances by highly-placed people in Japan. In October 1920, Baron Goto, a member of the House of Peers, who successively held the portfolios for Home Affairs and Foreign Affairs in the Terauchi Cabinet of 1916, published a warning to Americans that the passage of anti-alien legislation directed against Japanese immigrants would not be recognised by the Imperial Government, who would be compelled to refer the question either to the League of Nations or some other international tribunal. Japan, he continued, was willing to impose a further check upon emigration to the United States and was ready to meet that country more than half-way, should the latter desire the gradual elimination of its Japanese settlers; but she was not willing to stand by while a reckless minority persecuted her unfortunate nationals, who were, moreover, denied the privileges

of citizenship. Baron Goto concluded by declaring that should the amicable suggestions of Japan be rejected, she would 'regard the insult as almost an act of violence in which she will never acquiesce.'

The question of Japanese immigration in the Western States of the Union has been dealt with at some length, because it is undoubtedly the most serious of the differences which have marred American-Japanese relations in recent years, and the one, moreover, that would seem least susceptible of an amicable solution. This aspect of the problem has been clearly interpreted by an American naval officer, Vice-Admiral Niblack, who points out that racial characteristics and the evolution of history have placed the peoples of the Occident and the Orient on different planes of spiritual and social development. The English-speaking communities in the Pacific have evinced a deep-rooted determination to refuse admittance to Japanese and Chinese immigrants. The Asiatics object to this and to other discriminations against them. Here we have the alleged right of prior possession of property arrayed against the alleged right of equal opportunity for expansion. This is not a new situation in history; in the past, sometimes the right of possession has prevailed, whilst at other times the rival claim to equal opportunity has been successfully maintained. The ethical arguments which enter into the discussion appear to be so equally balanced that it is extremely difficult to arrive at a decision by any existing principles of law or equity. What amount of persuasion is going to convince intelligent Japanese that it is morally wrong for them to use force to attain that which principle and custom teaches them to regard as a right? And, again,

looking at the question from the other side, what argument can be advanced which is at all likely to move the inhabitants of California to admit that their view of property rights by which they exclude Asiatics is unjust? The problem is complicated by the fact that California has steadfastly refused to acknowledge the jurisdiction of the Federal Government in matters relating to the status and treatment of immigrants within her territory, though the Federal Government would naturally have to accept responsibility for the grave situation that would ensue were the Californian authorities to inspire or countenance violent action against the subjects of a foreign Power. In a statement issued at Washington in November 1920, the attitude of the Federal authorities towards this question was set forth in unequivocal terms. California had previously instituted a referendum to decide whether further legislative action should be taken to inhibit Orientals who were ineligible for American citizenship from controlling agricultural lands in the State. The referendum showed a large majority to be in favour of such legislation, but the statement from Washington made it perfectly clear that the authorities there would refuse to endorse any action on the part of the California Legislature that was not in accord with existing laws and treaties. On the other side there is the well-attested fact that the pledge of the Tokyo Government to limit and control the volume of emigration to the United States is being vitiated by the clandestine entry of Japanese by way of Canada and Mexico.

Some very eloquent speeches in favour of racial equality were made at the Peace Conference in 1919 by Japanese delegates. No one who read

those speeches would suppose that in Japan itself there is a great deal of discrimination against the foreigner. Such, however, is the case. Her protest against the passage of the Webb Act, which debars the Japanese from owning land in California, would have been more impressive but for the fact that the laws of Japan inhibit foreigners, as individuals, from acquiring landed property within the Empire.[1] The Japanese Government is thus demanding for its nationals a privilege which it does not itself accord to the nationals of other Powers. It is relevant to notice some further disabilities under which aliens labour in the Japanese Empire. They cannot, for instance, become owners of ships flying the Japanese flag, and such executive interest as they may attain in shipping concerns is subordinated by law to Japanese control. They are not eligible to hold stock in national, agricultural, or industrial banks, and the articles of many of the largest private companies exclude foreigners from membership. As individuals they cannot engage in mining operations, nor can they become members, shareholders, or brokers of the various exchanges, or members of the Chambers of Commerce. They are excluded from holding public office of any kind, and from membership of the Japanese bar. They do not enjoy the franchise. Foreign life insurance companies cannot write insurance in Japan unless a large percentage of the money collected is left in the country. Foreigners are not permitted to engage in agriculture. Foreign physicians and

[1] It was reported in November 1920 that the Japanese Government was contemplating the introduction of a Bill to confer upon all foreigners landowning rights in the Japanese Empire with the exception of defence zones.

surgeons cannot practise in the country unless they have passed a professional examination in the Japanese language, both written and oral, before a board composed of native doctors. Under the national laws, rebates may be granted by Japanese steamship companies on all goods imported or exported by Japanese merchants, a system which is widely exploited as a means of underselling foreign merchants. A record of the cases of litigation between foreigners and natives heard before the Japanese courts shows an overwhelming majority of decisions in favour of the latter. It has never, indeed, been seriously denied that the laws and the administration of justice in the courts of Japan—and also wherever Japanese courts exercise jurisdiction, as in China—discriminate against foreigners to a very marked degree. Most difficult of all to reconcile with the demand of Japan for racial equality are her own restrictions in regard to immigration. Chinese labourers are barred from Japan on the ground that they would lower the standard of living and institute unfair competition in the labour market. Even Korean labourers, who are now subjects of the Empire, are not allowed to enter the country unless it can be proved that their presence there would not conflict with the interests of Japanese workpeople. Japan, therefore, adopts exactly the same policy towards Chinese and Korean immigration that the United States adopts towards Japanese immigration, and for precisely the same reasons. The inconsistency of making diplomatic protests in these circumstances appears to have become obvious to the Japanese themselves. In a recent discussion of the American question, the *Jiji Shimpo* wrote: 'Now that Japan has advocated

the removal of all discrimination in the matter of her emigrants, it is essential that she should at once cancel the disabilities under which foreigners labour in Japan.'

Whilst the immigration controversy has been responsible in large measure for the growth of antagonism between the United States and Japan, it bids fair to be overshadowed in the near future by the question of Japanese policy in China. American interests in the Celestial Empire having increased very substantially in the last twenty years, the maintenance of the 'open door' has become an issue of capital importance to the United States. Unlike the immigration dispute in California, this has been regarded from the first as a question that touches the interests of the American nation as a whole. The enormous possibilities that China offers as a field for economic development make a strong appeal to the American imagination, and of late years both Government and people have watched with growing alarm and resentment the efforts of Japan to establish political and commercial supremacy in that quarter. In Manchuria particularly the present situation contains elements that augur none too well for the future peace of the world. The causes which have brought this situation about may be briefly stated. In 1900 Russia took advantage of the Boxer insurrection to occupy Manchuria, where she showed every disposition to make a permanent stay. From that moment shrewd observers of Far Eastern affairs regarded war between Russia and Japan merely as a question of time, for they knew not only that the latter had herself been casting a covetous eye on Manchuria, but that she would never tolerate the presence of Russian armies

at the threshold of Korea. To clear the Russians out of Manchuria, either by diplomatic pressure or force of arms, was the task to which Japan now applied herself. Protracted negotiations having failed of the desired effect, in February 1904 she declared war, and gained a series of brilliant victories by land and at sea. The struggle, which lasted rather more than eighteen months, came to an end in September 1905. Under the treaty of peace signed in that month both parties pledged themselves to evacuate Manchuria, save in respect of the Liao-tung Peninsula, where Japan took over the lease and succeeded to the other rights which Russia had previously enjoyed. With this exception, the administration of Manchuria was to revert to China. It speedily became evident, however, that the restoration of Chinese sovereignty was to be purely nominal. As early as December 1905, Japan had secured from Peking a concession to extend the South Manchurian Railway from Mukden to Antung, situated at the mouth of the Yalu River, at which point the line connects with the Korean railway. In 1910-12 a branch line was built from Changchun, the northern terminus of the Japanese South Manchurian Railway, to Kirin. This extension brought the total length of the railway to about 690 miles. Finally, in August 1917, the entire railway system of Korea passed under the management of the South Manchurian Railway, thus giving Japan through rail connection from Fusan, the Korean port nearest to her own territory, to Harbin. The result of all this diplomatic and industrial activity has been to make Manchuria a Japanese province in everything but name. Foreign trade exists on sufferance, for the principal means of

communication are under the control of Japan, who shows a strong and not unnatural tendency to favour her own subjects when commercial interests are at stake. Anticipating the possibility of competition, she had concluded with China a treaty wherein that country renounced the right both of building any railway in the regions traversed by the South Manchurian line and of granting concessions for such an enterprise over the head of Japan.

The rest of the world had viewed this absorption of Manchuria with some misgivings, but no positive action was taken until 1908, when the American Government proposed to guarantee to China the integrity of her Manchurian province by neutralising the South Manchurian Railway. The proposal was coupled with an offer to place at the disposal of China the sum of £20,000,000 for the purpose of repurchasing the railway, the money to be raised by a loan jointly subscribed by the various Powers. This suggestion proved most unpalatable to Japan, who pointed out, with no lack of warmth, that she, by her own unaided efforts, had prevented Russia from occupying Manchuria, to the exclusion of every other interest, China having been powerless to defend her property; and that since Japan had made heavy sacrifices on behalf of Manchuria, it was but right and proper that she should have her reward in the form of certain privileges, such as, for example, the control of the railways. The American Government thereupon submitted an alternative scheme, providing for the construction of a railway from Kinchow to Aigun, on the Amur River, a line that would have paralleled the South Manchurian Railway and effectively destroyed its monopoly in transportation. That Japan would have tamely

acquiesced in the building of this new line is extremely doubtful, and it is possible that an international crisis was averted by the subsequent collapse of the scheme, due to the withdrawal of the English bankers who were to have financed it in co-operation with an American syndicate.

In January 1915, when the Great War was engrossing the attention of most of the world, Japan took a further step which confirmed the suspicion that her policy in China went far beyond the attainment of certain economic privileges in Manchuria. Without warning she suddenly presented to China a note comprising twenty-one demands, relating to the Shantung Province, the Yangtse Valley, Fuhkien Province, South Manchuria, and Eastern Inner Mongolia. The major part of this document was communicated to the Allied Powers, but one section of the note, known to contain the most far-reaching demands, was withheld from them. From the negotiations that followed—the progress of which was accelerated in May 1915 by a Japanese ultimatum—it appeared that Japan was desirous of prolonging her lease of Port Arthur and the South Manchurian Railway, of securing for her nationals entire freedom to carry on business and mining operations in Manchuria, and preference in regard to political, financial, military, and police affairs within that province. The major portion of these demands was conceded by China in the agreement signed at Peking in May 1915, but the clauses contained in the secret part of the Japanese note were not put into effect, the reason being that when eventually they were divulged they proved to be of such a preposterous character that the Great Powers were constrained to use their influence at Tokyo to secure the withdrawal

of terms which signified nothing less than the enslavement of China. Before turning to this part of the Japanese document allusion must be made to the demand, included in the published section of the note, that the Chinese Government should pledge itself not to cede or lease to a third Power any harbour or bay along the coast of China. The presentation of such a demand presumed a Japanese protectorship over Chinese territory, and was therefore open to objection as it stood. But there was more behind it. Throughout the year 1914 there had been rumours in Japan that the United States contemplated the reorganisation of Foochow Arsenal in the Fuhkien Province, and that as a corollary to this work would be granted the lease of an adjoining harbour. The story was officially denied at Peking, but Japanese alarm had been excited, and the subsequent demand that China should lease no harbour or bay along her coast to any foreign Power save Japan was obviously directed not against Germany, as commonly assumed at the time, but against the United States.

The secret articles of the Japanese note were as follows:

(1) The Chinese Government shall employ influential Japanese advisers in political, financial, and military affairs.

(2) Japanese hospitals, churches, and schools in the interior of China shall be granted the right of owning land.

(3) Inasmuch as the Japanese Government and the Chinese Government have had many cases of dispute between Japanese and Chinese police, the settlement of which caused no little misunderstanding, it is for this reason necessary that the police depart-

ments of important places in China shall be jointly administered by Japanese and Chinese, or that the police departments of such places shall employ numerous Japanese, so that they may at the same time help to make plans for the improvement of the Chinese police service.

(4) China shall purchase from Japan a fixed amount of munitions of war (say 50 per cent. or more) of what is needed by the Chinese Government, or there shall be established in China a Sino-Japanese jointly operated arsenal. Japanese technical experts are to be employed and Japanese material is to be purchased.

(5) China agrees to grant Japan the right of constructing a railway connecting Wuchang with Kiukiang and Nanchang, another line between Nanchang and Hanchow, and a third between Nanchang and Chaochou.

(6) If China needs foreign capital to work mines, build railways, and construct harbour-works (including dockyards) in the province of Fuhkien, Japan shall be first consulted.

(7) China agrees that Japanese subjects shall have the right of missionary propaganda in China.

Mr. Putnam Weale, an admitted authority, considers that these terms were designed to administer the *coup de grâce* to the independence and integrity of China. 'Not only' (he writes) 'is a new sphere —Fuhkien Province—indicated; not only is the mid-Yangtse, from the vicinity of Kiukiang, to serve as the terminus for a system of Japanese railways, radiating from the great river to the coasts of South China; but the gleaming knife of the Japanese surgeon is to aid the Japanese teacher in the great work of propaganda; the Japanese monk and the

Japanese policeman are to be dispersed like skirmishers throughout the land; Japanese arsenals are to supply all the necessary arms, or failing that a special Japanese arsenal is to be established; Japanese advisers are to give the necessary advice in finance, in politics, in every department—foreshadowing a complete and all-embracing political control. Never was a more sweeping programme of supervision presented, and small wonder if the Chinese, when they learned of this climax, exclaimed that the fate of Korea was to be their own.' [1] These demands were, indeed, 'a more vicious assault on Chinese sovereignty than the Austrian ultimatum to Serbia of July 1914.' In its memorandum of May 1, 1915, the Chinese Foreign Office plucked up sufficient courage to repudiate them on the ground that they infringed China's sovereignty, the treaty rights of other Powers, and the principle of equal opportunity, and persuaded itself that they could not have been intended by Japan as anything other than 'mere advice' to China.

Less than three years after this extraordinary *démarche* Japan had succeeded in inducing China to enter into an agreement for common military and naval defence. Like the famous Twenty-one Demands, this treaty attracted but little notice in Europe—outside diplomatic circles—owing to the preoccupations of war; but it affords evidence not to be neglected by those who wish to form an accurate conception of Japanese political aims. The agreement was ostensibly concluded, according to the preamble, 'in view of the daily spread of enemy influence in Russian territory and the threatened danger to the peace and weal of the whole

[1] Putnam Weale, *The Fight for the Republic in China.*

Far East.' It provided for Sino-Japanese military co-operation, the standardisation of their war plans, transport, communications, and military codes, and therefore placed Japan virtually in control of the entire land forces of the Chinese Republic. The naval agreement was in similar terms, the following extracts being particularly illuminating:

'In order to ensure the rapidity and accuracy of naval operations and transport, the naval authorities of Japan and China shall exchange officials who will keep the two departments in mutual communication and touch. With regard to the repair of warships, arms, naval machinery, etc., and materials necessary for such repairs, assistance shall be reciprocally afforded as far as possible. This stipulation holds good with regard to munitions of war. The Japanese and Chinese navies shall establish information bureaus at such points as may be considered necessary, and shall exchange the charts and information necessary for operations. A naval code for mutual use shall be agreed upon. The present agreement and the detailed stipulations pertaining thereto shall not be published either in Japan or China, but shall be treated as naval secrets.'

Both the military and naval agreements were to lose their validity on the termination of a state of war between Japan and China, on the one side, and Germany and Austria on the other. That condition has since been fulfilled, but it is evident from the notes addressed to Japan by the Peking Government during the late autumn of 1920 that the former had not up to then withdrawn the troops which it had sent to occupy military posts in China by virtue of the defence agreement.

The policy of Japan during the past twenty years or more has unquestionably strengthened the suspicion, even among her friends, that its true aim is

to gain such a complete hold over China that no other Power shall have voice or part in shaping the destiny or exploiting the resources of that country. Should that be a faithful interpretation of her purpose, it is difficult to see how peace is to be maintained in the Far East. Whilst the pretensions of Japan would affect all the Powers, America has made it unmistakably clear that she, at least, would not rest content with verbal remonstrance. Whether the knowledge that to persist in the course they have been pursuing up to now must inevitably lead sooner or later to war has induced Japanese statesmen to postpone, if not definitely to renounce, their designs upon the integrity of China is a question that time alone can answer. It is, however, certain that they have been displaying of late a more reasonable temper as regards the claims of other Powers which have interests in China. This change of attitude was particularly noticeable during the negotiations that resulted last year in the formation of the China banking Consortium. The significance of this financial enterprise has been publicly explained by Sir Charles Addis, who is at the head of the British group of bankers taking part in it. Hopes are cherished that it will result in the substitution of international co-operation in China for international competition. In effect, the four Powers concerned—*i.e.* Great Britain, the United States, France, and Japan—have agreed to abandon the old system of spheres of influence or of interest, which has been in the past a fruitful cause of misunderstanding and friction. At the instance of their respective Governments, the four groups have surrendered their existing agreements and options, and have merged in the Consortium all their separate and individual

interests. The surrender, so Sir Charles Addis assures us, is complete. In making their contributions to the general pool the groups have stated in terms that these comprise all the agreements and options in China which they possess or control, and they have agreed to forgo their separate interests in any concessions of which they may become possessed in future. It is admitted that these results were not obtained without some difficulty. Much mutual forbearance and a certain degree of self-denial were necessary in order to arrive at a common measure of the different international interests involved. These virtues, however, were not found wanting, and on the whole the proceedings were marked with the greatest harmony. Sir Charles Addis paid a warm tribute to the loyal co-operation which throughout the long negotiations was forthcoming from the Japanese representatives; and he expresses confidence that the other members of the Consortium can continue to rely upon the scrupulous observance by Japan, both in the spirit and the letter, of the agreement which had been signed. Exactly how far this scheme of joint financial control over the economic development of China will extend is not yet clear; but that Japan seriously intends to concede the principle of the equality of international interests in that country is difficult to believe in view of her past record. Such a concession would be absolutely opposed to the policy she has consistently followed since 1905, and it is possible that international finance takes too sanguine a view of the future.

In seeking to diagnose the motives and aims of Japanese foreign policy due allowance must be made for the peculiar circumstances in which that policy

is framed. To outward seeming Japan is a Constitutional State whose political institutions are modelled more or less closely upon those of the Western communities. Actually her form of government is autocratic in the extreme, the people having no real voice in other than purely domestic affairs. It is true there is an Imperial Diet, consisting of an Upper and a Lower House, the latter composed of members elected by popular ballot. It is true also that in both Houses the proceedings are characterised by a scrupulous regard for Parliamentary punctilio. But the executive authority enjoyed by the Diet is strictly limited. Its function is that of a debating society, whose opinions are almost invariably disregarded when they clash with those of the Government. Since its inception in 1890 the Diet has been dissolved by Imperial ordinance no less than eight times for adopting a recalcitrant attitude towards the Government programme, and in nearly every case the Houses have reassembled in a chastened mood, eager to accept measures which they had previously declared to be intolerable. In Japan the real governing power is vested in the *Genro*, or Elder Statesmen, whose number does not now exceed five. Among them are Prince Yamagata, Marquis Matsukata, and Marquis Saionji, and all have played a distinguished part in the modern history of their country. Their prestige is great, and the influence they wield enormous. It is not disputed, even by those who point with pride to the growth of constitutional government in the Empire, that the *Genro* have been primarily responsible for every outstanding development in Japanese policy during the past forty years. A conspicuous example of their power was supplied in 1894, the year in which

war was declared upon China. At that period the country as a whole was seething with unrest. The imposition of new and heavy taxes, chiefly for the benefit of the fighting forces, had created such widespread discontent that fears were entertained of a popular insurrection. In this emergency the *Genro* came to the rescue by creating a diversion abroad. The *coup de main* at Seoul, resulting in the seizure by Japanese troops of the Korean court and government—an act which made war with China inevitable—was effected by Count Otori, the Japanese envoy, at the direct instance of the *Genro*, only a few days after the Japanese Diet had been dissolved for having opposed the Cabinet. The result of this timely diversion was to evoke a great outburst of patriotic sentiment. The people instantly forgot their grievances and rallied unanimously to the support of the Government. When the new Diet assembled, the War Budget and a series of taxation projects very much more drastic than the previous proposals were passed without a dissentient voice. In more recent times the influence of the *Genro* has unquestionably been responsible for the aggressive character of Japanese foreign policy, the less obvious motives of which have been cogently discussed by Mr. Putnam Weale.

'The Japanese, who owe their whole theocratic conception to the Chinese, just as they owe all their letters and their learning to them, still nominally look upon their ruler as the link between Heaven and Earth, and the central fact dominating their cosmogony. Although the vast number of well-educated men who to-day crowd the cities of Japan are fully conscious of the bizarre nature of this belief in an age which has turned its back on superstition, nothing has yet been done to modify it, because—and this is the im-

portant point—the structure of Japanese society is such that without a violent upheaval which shall hurl the military clan system irremediably to the ground, it is absolutely impossible for human equality to be admitted and the man-god theory to be destroyed. So long as these two features exist—that is, so long as a privileged military caste supports and attempts to make all-powerful the man-god theory—so long will Japan be an international danger-spot, because there will lack those democratic restraints which this war has shown are absolutely essential to secure a peaceful understanding among the nations. . . . The persistence of the type of military government which we see to-day in Japan is harmful for all alike, because it is as antiquated as Tsarism and a perpetual menace to a disarmed nation such as China. So long as that government remains, so long must Japan remain an international suspect, and be denied equal rights in the council-chambers of the Liberal Powers.'

It is a cardinal principle of the ruling element in Japan that a people which is kept preoccupied with trouble abroad will have neither the time nor the inclination to brood over its domestic grievances. It would, however, be doing the Elder Statesmen of Japan a gross injustice to impute to them no motives other than political expediency. On the contrary, their every action has proved them to be inspired with an almost fanatical faith in the great and glorious destiny that awaits their country. They have watched with increasing alarm the spread of a particularly intemperate form of Socialism which differs in no essential feature from the Bolshevik creed. Labour troubles, formerly so rare as to be scarcely existent, have lately multiplied to an alarming extent. The discontent of the masses has been aggravated by the profiteering which has been rampant of late years, and was the direct cause of

the rice riots that convulsed Japan in the latter part of 1918. Owing, it is said, to certain enterprising financiers having 'cornered' the national stocks, the price of rice was nearly quadrupled in the space of two years, and no efforts on the part of the Government availed to check the upward trend of prices. Beginning with a small outbreak in Toyama, where the shops and warehouses were raided by indignant housewives, the movement spread so rapidly and assumed such an alarming character that for a time it seemed as though the whole proletariat was in active revolt. Kyoto, Osaka, Kobe, Nagoya, Hiroshima, and the districts round Tokyo were the scenes of extensive rioting and bloodshed. At Kobe, where the mob gained complete control for several days, there were regular battles between troops and rioters, and the tale of casualties was high. Most of the coal miners struck work as a demonstration of sympathy, and in a few cases the pit machinery was wrecked. Gradually, however, the forces of the Government gained the upper hand. Wholesale arrests were made, and no fewer than seven thousand prosecutions instituted in connection with the riots. The severity of the punishment meted out to those who were convicted of complicity—including hundreds of mere boys—bore witness to the alarm felt by the Government.

The increasing prevalence of strikes is another symptom of the disturbed condition of the country. Between 1914 and 1919 the average number of strikes per year was about 200, the rapid rate of increase being shown by the following statistics: 1913, 27 cases; 1914, 50 cases; 1915, 64 cases; 1916, 108 cases; 1917, 398 cases; 1918, 417 cases.

In common with other countries which were only partially involved in active hostilities, Japan enjoyed during the late war an extraordinary measure of industrial prosperity. So great was the demand for labour in connection with the execution of war contracts on behalf of the Allied Powers that wages rose to what was, for Japan, a fabulous height, and large numbers of peasants migrated to the industrial centres in the hope of sharing in the golden harvest. With the end of the war came the inevitable reaction. Vast numbers of workpeople found themselves without employment; wages fell rapidly, but there was no corresponding fall in the cost of living, and the result was that a considerable percentage of the population was reduced to absolute destitution. In this way the ground was well prepared for the seeds of Bolshevism, which to all appearance has made alarming headway since the end of the war. That the real rulers of Japan, in whom the feudal spirit still burns fiercely beneath a veneer of Western civilisation, will remain passive in face of this growing menace both to their power and their most sacred traditions is not to be believed. On the contrary, it is virtually certain that they will shrink from no course of action which is calculated to stem the rising tide of social rebellion and anarchy. We have seen that on an earlier occasion, when the domestic situation was far less grave, they did not scruple to plunge the country into war. What more likely than that the same expedient will be adopted in the present emergency? Patriotism is still a virtue in Japan, and there is little doubt but that all the best elements in the nation would support a policy of war if they believed the alternative to be social chaos. This is the crucial though imponder-

able factor that is too often ignored by students of Japanese policy.

It may well be true that for Japan deliberately to provoke a conflict with the United States would eventually prove quite as ruinous to her as the unchecked spread of Bolshevism threatens to become. Even so, however, there is hardly any question as to what her choice would be should internal conditions develop in such a way as to render a decision imperative. Nor is it possible to doubt the ardent response that would be given by an overwhelming majority of the nation if its rulers elect to draw the sword. Issues that make the strongest possible appeal to Japanese patriotism are involved in the dispute with America. No race is more strongly imbued with national pride or more sensitive as to its international status. It is for this reason that the spectacle of their kindred being denied the privilege of citizenship in the United States on the score of racial inferiority has already caused such passionate resentment in Japan. Bitterness has been intensified by the attitude of America towards Japanese expansion in China. Newspapers of nearly every shade of opinion have lately been representing America as the chief and indeed the only serious obstacle that stands between Japan and the control of Eastern Asia, with all its illimitable and untapped wealth. Their cry is that Japan, compelled by overcrowding at home to seek new outlets for her energy and industry on the Asiatic mainland, finds herself thwarted at every turn by the United States. Having seized the richest and most fertile islands of the Pacific, America—so runs the argument—now wishes to exploit for her own exclusive benefit the treasures of Manchuria and

Siberia. But is this Colossus of the West so formidable as it is assumed to be? Has it really the power to support such inordinate pretensions? The Japanese are inclined to answer in the negative. They have seen the Pacific all but denuded of American warships. They have observed with amazement the omission of America to fortify her outposts in the Pacific and to make adequate provision for the maintenance of a fleet in the western area of that ocean. They have come to look upon the defenceless Philippines as theirs for the taking. It is true that a powerful American fleet has recently appeared in the Pacific; but without defended bases in the West it remains practically tied to its own coast. Pursuing this train of thought, the Japanese may well ask themselves what they would have to fear in the event of war with the United States, and whether it would not be better to settle once and for all a dispute which can never be satisfactorily accommodated by peaceful means.

Such is the position to-day. How it will develop cannot be predicted with certainty, but the prospects of peace are none too good. For reasons which have been explained, much depends upon the trend of internal affairs in Japan. On the other hand, the enforcement in California of drastic anti-Japanese legislation may at any moment precipitate a crisis. At all events the contingency is sufficiently probable to justify a detailed inquiry into the military resources of the two Powers at variance, together with a study of the strategical problems that would arise in the event of an armed conflict between them.

CHAPTER III

THE UNITED STATES NAVY: ITS MODERN DEVELOPMENT AND ADMINISTRATION

The history of the modern Navy of the United States may be said to date from 1880. The term 'modern' is used advisedly, for in the record of American naval development a wide gap separates the old Navy from the new. A period of more than fifteen years intervened between the disappearance of the Fleet as it existed at the close of the Civil War and the building of the ships which constituted the nucleus of the Fleet as it exists to-day. When peace was proclaimed in 1866, the Federal Navy had attained very imposing dimensions. No fewer than 674 armed ships were then under the Union flag, whilst eighty more were building or in reserve. Sixty of these vessels were ironclads, capable of operating at sea, though most of them were too small to venture far beyond the coast. The vast majority of the ironclads were monitors, which in those days were justly considered to be among the most formidable warships of the world. Thus, so far as numbers and armament went, the conclusion of the Civil War found the Fleet in a position but little inferior to the armadas of the greatest foreign Powers. The more remarkable, therefore, is the fact that in the course of a few years this vast fighting force had dwindled down to insignificant dimensions. By 1880 the number of American warships

in service had been reduced to forty-one. Seventeen of these were iron or steel-built monitors, of which number, however, only three were armed with rifled breech-loading guns. The remainder carried muzzle-loading smooth-bores, which the progress of naval artillery had rendered altogether obsolete. There were also six armoured monitors built of wood; sixteen unarmoured corvettes, nearly all of which mounted smooth-bore ordnance; and two torpedo-vessels. Such was the almost incredible condition of impotence into which the United States Navy had lapsed, and this at a time when nearly every European Power had in service entire squadrons of large, sea-going ironclads.

Many causes were responsible for the neglect which the Navy suffered in the years following the Civil War. In the first place, the almost decisive influence of sea-power on the issue of the war was imperfectly recognised. The Navy was held to have played quite a secondary rôle, whereas, in truth, it had rendered incalculable service to the Federal cause, not merely by direct action on the great rivers, but still more by the blockade which it maintained on a coast more than 3000 miles in length, thereby preventing the Confederacy from drawing on foreign sources for the war material and provisions that, had they been available, would unquestionably have enabled the South to prolong its resistance. Secondly, for many years after the war the country was necessarily engrossed in the work of repairing and reconstructing the shattered fabric of its economic system. Among the American people, war and everything pertaining to it was regarded with abhorrence—a very natural feeling in view of the terrible sacrifices which the civil con-

flict had entailed. This was, perhaps, the principal reason why, for so long a period, little or nothing was done to maintain the Fleet at a reasonable standard of strength and efficiency. From 1866 to 1880 the United States was virtually disarmed at sea, and had any of the Great Powers seen fit to provoke a quarrel, the consequences to the American Republic would probably have been disastrous. Still another explanation of the neglect which the Navy suffered during this period was to be found in the widespread belief that warships could speedily be improvised in case of emergency. This idea was based on the experience of the Civil War, when a huge and formidable fleet had been created with marvellous rapidity. But it was forgotten that many of the improvised ships would have cut a poor figure beside the powerful sea-going ironclads or the fast, heavily-armed cruisers of Europe. Moreover, the closing decades of the nineteenth century witnessed a positive revolution in naval construction and armaments. It produced the large steel-built battleship, specially designed to carry massive armour and guns of ponderous weight—a type which took years to build and equip. The old, crude muzzle-loading gun had given place to the rifled breech-loader, which at a range of several miles could drive an explosive shell through stout armour. And as ships and weapons had increased in power, so had they increased in complexity and cost. It was no longer possible to take a number of merchant ships and, by the simple process of armouring the hulls and placing guns on board, convert them into powerful ships of war. Such vessels might do useful work as auxiliary cruisers, but they could not stand up against the great sea-going ironclads of European navies.

It was in 1880 that thoughtful Americans began to direct attention to the unsatisfactory state of the national Navy. A movement was set on foot to remedy the deplorable conditions thus revealed, and in the same year Congress appointed a board of officers to examine the few ships that remained in service, with a view to modernising them as far as possible. In 1881 a further step was taken by the appointment of a committee to consider and report upon 'the pressing need of appropriate vessels in the service at the present time.' In due course this body made its report. Laying stress on the scarcity of vessels which came up to the modern standard of speed and armament, it urged the provision of at least seventy unprotected cruisers, together with five armoured rams, and twenty-five torpedo-vessels. The report did not advocate the immediate building of large ironclads, though these were declared to be absolutely necessary for the defence of the country in war. It pointed out that the latest technical developments in this direction were not yet understood in the United States, where, moreover, there was no plant able to turn out the heavy forgings required for such construction. The committee therefore advised the Government to send a number of naval officers to foreign countries, where they would have an opportunity of familiarising themselves with all recent improvements in armoured vessels. As for unprotected ships, it was urged that thirty-eight of these should be built without delay. Suggestions were made with regard to their size, speed, and armament, and the report added that 'a bold and decided step should be taken to win back from Europe our former prestige as the best shipbuilders of the world.' Congress, however,

did nothing to carry these proposals into effect, and it was not until March 1883 that money was voted for the first vessels of the new fleet, viz. three protected cruisers and one despatch-boat. Of these four vessels the cruisers *Boston* and *Chicago* and the despatch-boat *Dolphin* are still on the Navy List. In her day the *Chicago* was looked upon as one of the finest cruisers afloat, and with certain modifications the design was widely copied abroad. A few details of this ship, which as the forerunner of the modern American cruiser possesses historic interest, will not be out of place. She was laid down in 1883 at Chester, Pa., and launched in 1885. With a length over all of 342 ft. and a breadth of 48 ft., she displaced 4500 tons, and was fitted with engines of 9000 horse-power, which gave her a speed of 18 knots. In the bunkers there was room for 940 tons of coal, sufficient for a cruise of several thousand miles at moderate speed. Bulkheads running across the ship divided the hull into ten water-tight compartments, whilst a steel deck fitted amidships protected the boilers and machinery from gunfire. She carried a very powerful battery of four 8-in., eight 6-in., and two 5-in. guns, all of the rifled breech-loading type. On her trial runs the *Chicago* proved herself a fast and reliable steamer. In speed and every other quality she was incomparably superior to the *Trenton*, which had been the largest and finest cruising vessel of the old Navy. The *Atlanta* and *Boston*, built at the same time as the *Chicago*, were smaller sister cruisers of 3000 tons and 16 knots speed, and carried a somewhat lighter battery. On the whole, these first three vessels were a credit both to the designers and builders, and their success furnished the best answer to those

sceptics who had maintained that American shipyards were incapable of building fast modern cruisers.

For the next few years appropriations for the Navy were on a very modest scale, but the fact that money was voted year by year showed that naval defence was no longer wholly in the background. In 1885 two protected cruisers and two gunboats were authorised, but the following year brought a much more ambitious programme, which deserves special notice because it included the first sea-going battleships to be built in the United States. These were the ill-fated *Maine* and the *Texas* (afterwards rechristened *San Marcos*). The last-named vessel, which displaced 6300 tons, was built to plans prepared by an English naval architect; but the *Maine*, of 6680 tons, officially classified an armoured cruiser, was designed by the Navy Department. Both ships carried heavier guns and thicker armour plates than were customarily fitted to vessels of such moderate tonnage. During her first years at sea the *Texas* was not a great success, owing, it was said, to her weak construction. Repeated firing from the heavy guns weakened the structure to such an extent that the vessel became unseaworthy, necessitating extensive repairs. Before these were executed she foundered in dock, but was raised and refitted. On the other hand, she acquitted herself well under the arduous conditions of the Spanish War, and her long and honourable career terminated eight years ago, when she was used as a target-ship in some vitally important gunnery experiments. The *Maine* was a good ship from the start, either because better workmanship was put into her or by reason of superiority in design. The

completion of these vessels was hailed with satisfaction in American naval circles as a sign that the country had definitely embarked on a policy of building sea-going battleships. It was pointed out, however, that they were less than half the size of many European battleships of equal date, and the inclusion of four monitors in the same programme showed that Congress was still partial to the cheaper, coast-defence ironclad type. Other vessels of the 1886 programme were the protected cruiser *Baltimore*, the torpedo-boat *Cushing*, and the dynamite cruiser *Vesuvius*. This last vessel has been so often described that there is no occasion to recapitulate her details here. It is enough to say that she owed her existence to the Zalinski pneumatic dynamite gun, which many sanguine people believed would abolish warfare at sea by making it too destructive. In practice, however, this weapon did not come up to expectations. The range was too short, and the flight of the projectile too erratic to make it a reliable weapon, while the destructive effect of the dynamite shell was soon equalled by that of the high-explosive projectiles which could be fired with accuracy at a range of many miles.

The displacement of the vessels authorised in 1886 reached a total of 36,475 tons, and it was not until four years later that this figure was exceeded. Two monitors, two cruisers, and two gunboats were voted in 1887. In the next year a larger programme was passed, comprising one armoured cruiser, six other cruisers, and a gunboat. The armoured cruiser was the *New York* (now the *Rochester*), which at the time of her completion was probably the finest representative of her type afloat. She was a twin-screw vessel of 8150 tons, and on her trials

reached a speed of more than 21 knots. Her original armament consisted of six 8-in. and twelve 4-in. guns, which has since been altered to four 8-in. and ten 5-in. guns of modern design. The side of the hull and the gun positions are protected by armour plating. Although launched as far back as 1891, the *Rochester* is still a serviceable ship, and is rated in the Navy Register as a first-class cruiser. In the 1889 programme the only vessel of importance was the *Katahdin*, a 'ram' of novel design, of which great things were expected. She displaced 2183 tons, and was intended to travel at 17 knots, but never succeeded in making this speed. She had no weapons beyond her sharp ram, and, as she was much too slow to overtake and attack the faster battleships of the period, her actual value as a fighting ship was negligible. In 1890 Congress voted credits for three first-class battleships, one cruiser, and a torpedo-boat, with a total of 38,334 tons. The battleships were the *Indiana*, *Massachusetts*, and *Oregon*, each with a displacement of 10,288 tons. They were larger by nearly 4000 tons than the battleships of 1886, and the extremely heavy battery and thick armour which they carried made them unique. On paper they were the most powerful ships in the world, but the great weight of the guns and armour carried high above the waterline made them roll heavily in bad weather. The main guns were mounted in unbalanced turrets, which caused the ship to heel over when these weapons were trained on the beam. Another interesting ship of the same year was the cruiser *Columbia*. She was designed for the dual function of scouting and commerce destruction, for both of which she was well fitted by her speed of nearly 23 knots. In the

year following only one warship was authorised, viz. the *Minneapolis*, a sister ship of the *Columbia*. In 1892 the battleship *Iowa* and the armoured cruiser *Brooklyn* made up the programme. The appropriations for 1893-94 were limited to three gunboats, three torpedo-boats, and a submarine (the A-1, formerly *Plunger*); but in 1895 two battleships, the *Kearsarge* and *Kentucky*, were authorised, together with ten gunboats and torpedo-vessels. Three further battleships and ten torpedo-boats were provided for in 1896, followed in the next year by four small craft with a total of 2050 tons. From 1890 to 1897 Congress had voted the following new construction: 9 battleships, 1 armoured cruiser, 2 protected cruisers, 9 gunboats, 20 torpedo-boats, and 1 submarine. The programmes had fluctuated from year to year in a manner that betrayed the absence of any settled policy on the part of the Government with regard to the standard of naval strength dictated by national requirements. But in 1898, the year of the war with Spain, the nation at length awoke, and ever since, with only occasional lapses, has shown a more consistent attitude on this question. The programme of 1898 comprised thirty-six vessels with a total of 59,570 tons. This exceeded by more than 20,000 tons the 'record' programme of 1890. The most important units were the three battleships of the (new) *Maine* class, to which were added four monitors and 28 torpedo-craft. Large as it seemed, this year's naval vote was far surpassed by that of 1899, when twelve vessels, aggregating 105,084 tons, were sanctioned. Prior to the great programme of 1916, this total has only twice been exceeded. Between 1900 and 1915, inclusive, the highest total reached was that of

1908 (123,480 tons), the lowest that of 1907 (21,400 tons).

No individual did so much to establish American sea-power on a solid foundation as the late Theodore Roosevelt, who succeeded to the Presidency at a time when questions of national defence were engaging more than ordinary attention. The successful war with Spain, and the consequent acquisition of territories oversea, had done much to revive popular interest and pride in the Navy. It was plain to every reflective mind that the newly-won possessions, separated as they were from the mainland by thousands of miles of sea, could not be held indefinitely except with the aid of a powerful fleet. To the creation of such a fleet President Roosevelt addressed himself with characteristic energy. In messages to Congress and in his public speeches he dwelt with forceful eloquence upon the need for a naval establishment corresponding to the requirements of the new strategical situation. What success attended his efforts is shown by the fact that during his seven years of office the numerical strength of the Navy was almost doubled. Actually the increment of power was very much greater than this, for Roosevelt broke away from the traditional policy which had up to then limited the dimensions of American battleships and made them unsuitable for operations at a great distance from their bases. He insisted that no ship should be built unless it was fully equal in all-round fighting power to contemporary foreign ships of the same type. The result was that in the course of a few years the United States Battle Fleet came to consist mainly of ships which compared favourably with the finest men-of-war afloat.

The earlier ships of the new Navy were not invariably successful. With a laudable desire to make the most of the limited funds grudgingly placed at their disposal, the Navy Department planned vessels which, for their size, were exceedingly powerful on paper. But when a comparatively small vessel is burdened with heavy guns, thick armour, and powerful engines, there is not much space or weight left over for other purposes. The consequence is that officers and men have very cramped quarters, and life on board is not a bed of roses, especially as these small but heavily-armed ships are nearly always bad sea-boats. Some twenty-five years ago an American naval officer drew a vivid picture of the sufferings of the firemen and engineers in the cramped machinery spaces of these early ships. 'We unquestionably try to put too much into small displacements,' he declared. 'We cannot get sustained sea speed on small dimensions. I cruised for several years in a ship where the dynamo-room had a temperature of about 90 degrees, and I suffered physically as a result. In the *New York*[1] it is estimated by a good authority that the temperature of the berth deck will be 110 degrees.' In other cruisers of the period the heat below deck was so intense and the ventilation so defective that a long voyage brought officers and men to the verge of collapse. As for the behaviour of these early vessels in heavy weather, the following quotation from a magazine of 1897 describes the experience of the Atlantic Squadron in a severe gale encountered on passage from Hampton Roads to Charleston:

'The *New York* and *Columbia* stood the test well. The monitor *Amphitrite* could not keep on her course. Her low

[1] Since renamed the *Rochester*.

freeboard and decks all awash made her comparatively safe as long as she was allowed to steam head on, but in the cross seas the waves that came aboard massed upon her superstructure, smothering her down and making speed impossible. While those on board the flagship were anxiously watching the *Amphitrite*, their attention was diverted to the battleship *Indiana*. She was seen to be rolling frightfully. It was plain that her centre of gravity was uncomfortably high. At length she signalled her turrets loose and her guns moving. There was danger that she might capsize and go down with all on board. The Admiral signalled her to return to Hampton Roads. The *Indiana* has too much superstructure, and carries metal too heavy for her design. In her present state she is a fair-weather ship, powerful and efficient, indeed, in smooth water, but liable to fail the nation in an emergency because of her weakness in a seaway.'

Since those times, however, American naval architects have learned much. With few exceptions, the modern battleships and cruisers are big, roomy vessels, lighted and ventilated on the most approved system, and steady gun platforms even in severe weather.

We come now to 1916, the year in which the United States adopted by far the largest naval programme in its history. Owing to the war then raging in Europe this measure passed almost unnoticed abroad, but more recently it has been the subject of a great deal of discussion in England, where the reasons which inspired it appear to be misunderstood. Nothing is more certain than that the promoters of the Bill were entirely innocent of designs upon the supremacy of the British Navy. In order to understand their motives it is necessary to recall the international situation at that time. The Great War was two years old ; its issue was still

in doubt, and to observers distant from the actual scene the prospects of a German victory did not appear entirely remote. The Battle of Jutland had been fought, but its decisive effect had not as yet been appreciated. The German Navy, so far at least as its material was concerned, remained virtually intact. It was still the second strongest fleet in the world, and since the German shipyards were known to be working at high pressure to make good the wastage of war, there was every reason to anticipate that a peace by negotiation—a not improbable contingency at that date—would leave Germany stronger at sea than ever before. Such, at all events, was the view taken by American statesmen, who were well aware that Germany cherished feelings of bitter animosity towards their nation and would neglect no chance of paying off old scores once she had settled accounts with her European foes. It was the realisation of this supposed danger ahead that led to the national 'preparedness' campaign of 1915-16, in which all the resources of publicity were enlisted in the cause of naval expansion. The growing power of Japan was not overlooked, and one of the principal arguments in favour of the Bill was that it would provide the ships necessary for the formation of a strong Pacific squadron. But it was mainly as a defence against future aggression from Germany that the measure received its widest support. If at the present time the large naval programme of the United States is creating some perturbation in England, the blame must be laid at the door of those American politicians who have lately gone out of their way to emphasise the predominant position at sea that their country will enjoy when all the ships

authorised in the Act of 1916 have passed into service. This suggestion that the American Navy of the future must be the strongest in the world is of very recent origin.[1] It was first put forward by President Wilson during his attendance at the Peace Conference, his idea—as explained in cable messages to the leaders of Congress—being that supremacy at sea would enable the United States to become the armed custodian of world-peace. It was subsequently elaborated by Mr. Daniels, Secretary of the Navy, whose insistence on the need for a supreme fleet has been denounced by American critics as a manœuvre to obtain the votes of certain elements in the country which have no love for England. Whether this is so or not, the fact is incontrovertible that the American warships now building were authorised at a period when Germany was regarded as the most probable enemy.

The Act of 29th August 1916 differed from all previous naval legislation in that it embodied for the first time the policy of a continuous programme of construction covering a term of three years. Its scope was not limited to shipbuilding, for it authorised a large increase in the *personnel*, made provision for a naval reserve force, and instituted a system of promoting officers by selection. Furthermore, it empowered the Navy Department to increase the State resources for the supply of naval material by erecting Government plants for the manufacture of armour plate and projectiles, together with a large laboratory for carrying out experiments

[1] The following passage occurs in the Annual Report for 1916 issued by the Secretary of the Navy (Mr. Daniels): 'It has never been suggested seriously that our nation should attempt to equal in the number of ships the greatest navy in the world.'

of interest to the Navy. In the sphere of aviation it set aside generous funds for the creation of a Naval Flying Corps and the purchase of the necessary equipment. A heavy increase in the reserves of naval ammunition, torpedoes, etc., was also sanctioned. The shipbuilding clauses of the Act authorised the following new construction: 10 battleships, 6 battle-cruisers, 10 scout-cruisers, 50 torpedo-boat destroyers, 9 ocean-going submarines, 58 coastal submarines, 3 fuel ships, 1 repair ship, 1 transport, 1 hospital ship, 2 destroyer tenders, 1 submarine tender, 2 ammunition ships, and 2 gunboats. To hasten the execution of this vast programme the Navy Department was instructed to improve and equip the national Navy yards at Puget Sound, Philadelphia, Norfolk, New York, Boston, Portsmouth (New Hampshire), Charleston, and New Orleans, to enable them to undertake the construction of part of the new fleet. Finally, the Secretary of War and the Secretary of the Navy were directed to submit plans for improving the harbours, canals, and connecting channels which, in their judgment, would best provide facilities for naval operations in defence of United States ports on the Atlantic, Gulf, and Pacific coasts. To this far-reaching measure of naval legislation was attached a proviso to which subsequent events have given a peculiar interest.

'It is hereby declared [it read] to be the settled policy of the United States to adjust and settle its international disputes through mediation or arbitration, to the end that war may be honourably avoided. It looks with apprehension and disfavour upon a general increase of armament throughout the world, but it realises that no single nation can disarm, and that without a common agreement upon the

subject every considerable Power must maintain a relative standing in military strength.

'In view of the premises, the President is authorised and requested to invite, at an appropriate time, not later than the close of the war in Europe, all the great Governments of the world to send representatives to a conference which shall be charged with the duty of formulating a plan for a court of arbitration or other tribunal, to which disputed questions between nations shall be referred for adjudication and peaceful settlement, and to consider the question of disarmament and submit their recommendations to their respective Governments for approval. The President is hereby authorised to appoint nine citizens of the United States, who, in his judgment, shall be qualified for the mission by eminence in the law and by devotion to the cause of peace, to be representatives of the United States in such a conference. The President shall fix the compensation of said representatives, and such secretaries and other employees as may be needed. Two hundred thousand dollars, or so much thereof as may be necessary, is hereby appropriated and set aside and placed at the disposal of the President to carry into effect the provisions of this paragraph.

'If at any time before the construction authorised by this Act shall have been contracted for there shall have been established, with the co-operation of the United States of America, an international tribunal or tribunals competent to secure peaceful determinations of all international disputes, and which shall render unnecessary the maintenance of competitive armaments, then and in that case such naval expenditures as may be inconsistent with the engagements made in the establishment of such tribunal or tribunals may be suspended, when so ordered by the President of the United States.'

Within seven months from the passage of the Naval Act the United States found itself involved in the Great War. The proviso quoted above ceased, therefore, to have immediate significance; and as

the contract for every vessel specified in the Act, together with orders for a large amount of additional construction authorised under the emergency programmes, had been placed before the termination of hostilities, the completion of the building programme was in no way affected by it. Nevertheless, the proviso is of interest as documentary evidence that as early as 1916 the United States Congress had favoured the establishment of an international assembly differing in no essential respect from the League of Nations proposed at a later date by President Wilson, but which, in its original form, has failed to gain the support of the American people.

The amount of new construction authorised by the Act of 1916 and under the later emergency war programmes is shown below:

Authorised in 1916	Battleships	4
	Battle-cruisers	4
	Scout-cruisers	4 [1]
	Destroyers	20
	Submarines	31
Authorised in 1916, but not appropriated for until a later date	Battleships	6
	Battle-cruisers	2
	Destroyers	30
	Submarines	27
Authorised in 1917	Destroyers	76
	Submarines	20
Authorised in 1917 (Naval Deficiency Bill)	Destroyers	144
Authorised in 1917 (Emergency Fund)	Destroyers	9
	Submarines	11

During the war period the demand for vessels specially capable of dealing with hostile submarines

[1] Funds for the building of the remaining six scout-cruisers were appropriated in 1918.

became so urgent that work on all the larger ships was practically suspended, and the shipbuilding resources of the country were devoted to the rapid multiplication of destroyers, submarines, and patrol craft of every description. This delay was exceedingly fortunate for the American Navy, in that it made possible a modification of the plans of the battleships and battle-cruisers and enabled many improvements suggested by war experience to be introduced, especially in regard to protection against gunfire and submarine attack. Had the ships in question been built to their initial designs they would have been dangerously vulnerable to this form of attack. Advantage was also taken of the delay to change the armament of the battle-cruisers, eight 16-in. guns being substituted for the ten 14-in. originally proposed. Besides the vessels enumerated in the above tables, a very large number of auxiliary vessels were ordered and built during the war period, such as patrol gunboats, submarine chasers, and minesweepers. As the existing resources in the country were utterly inadequate to cope with this sudden and enormous demand, the majority of the shipyards were enlarged and new establishments hastily laid out. Some notable records were made in the rapid construction of destroyers. The *Ward*, a 1150-ton boat built in 1918, was launched 17½ days after the laying of her keel; whilst the *Reid*, a similar vessel, was built and completed in 45½ working days. Thanks to all this feverish activity from 1917 onward, the Navy was reinforced by nearly 280 destroyers, a type in which it had previously been deficient.

Before proceeding to a detailed description of the material resources of the United States Navy at

present and in the near future, some account may be aptly given of its system of administration. The Commander-in-Chief is the President, but the actual management and control of naval affairs is, of course, in the hands of the Navy Department, at the head of which stands the Secretary of the Navy, who is a member of the Cabinet but has no seat in Congress. For the eight years ending in March 1921 this office has been filled by Mr. Josephus Daniels, whose administration coincided not only with a phenomenal increase in the size of the Navy, but with the introduction of numerous reforms relating to the *personnel* and conditions of service, many of which have aroused bitter opposition. It is interesting to note that until 1798, when the Navy Department was created, naval affairs were controlled by the Secretary of War. This priority of secretaryship makes the Army the senior service, with the result that on all ceremonial occasions the soldier takes precedence over the sailor. There is an Assistant Secretary of the Navy, who, like his chief, is always a civilian, and who acts in place of the Secretary when the latter is absent from the country. Should both the Secretary and the Assistant Secretary be absent, their duties devolve upon the Chief of Naval Operations, who, broadly speaking, performs the functions of a Chief of Naval Staff. The officer holding this appointment—which was created as recently as 1915—enjoys the rank and title of Admiral, and is the senior officer of the naval service. He is responsible for all operations of the Fleet and for the preparation of war plans. His jurisdiction extends to the Naval War College, the Office of Naval Intelligence, and the office of Gunnery Exercises and Engineering Performances. He is

responsible for the efficient working of the wireless, aeronautical, and mining branches of the service; for the organisation of coast defence so far as it comes under naval control; and for the preparation and revision of all drill books, signals, and cipher codes. He is charged, in addition, with the drafting and amendment of regulations for the government of the Navy. He keeps the Secretary informed of movements and operations by the Fleet, prepares all orders which the Secretary may issue in relation thereto, and keeps the service records of fleets, squadrons, and ships. He is the senior adviser to the Secretary in matters pertaining to the military characteristics of new ships and such renovation of existing vessels as affects their military value; he is expected to report on the strategical value and most suitable location of docks, fuel depots, wireless stations, and to recommend such reserves of ordnance, ammunition, and other supplies as may be necessary to the maintenance of the Fleet. In preparing and revising plans for the use of the Fleet in war he freely consults with and has the advice and assistance of the various bureaus, boards, and offices of the Department.

The Chief of Naval Operations from time to time witnesses the operations of the Fleet as an observer. He is *ex officio* a member of the General Board, an advisory body which has no counterpart in the British service. This board is composed of a limited number of officers most of whom are specialists in their own branch, such as construction, gunnery, torpedo, engineering, etc. Its principal duty is to draw up the naval programme each year, taking into account the international situation, the strategical requirements of naval defence, and other relevant

factors. It has, however, no executive authority, and its recommendations in regard to naval policy are rarely, if ever, accepted in their entirety. The deliberations of the board cover a truly enormous range of subjects; it speaks with authority upon such diverse topics as the latest developments in fire control and the use of homing pigeons in combating enemy submarines. The policy of the General Board in regard to shipbuilding programmes appears to be governed by the sound old rule of making large demands in the hope that those actually conceded will approximate to what is absolutely necessary. The sub-sections of the Office of Naval Operations may be briefly described:—(1) the Communication Office, which handles all the internal despatch work of the Navy Department, and is responsible for the inter-departmental transmission of its orders; (2) the Office of Naval Intelligence—corresponding to the Naval Intelligence Division of the British Admiralty—which collects, classifies, and distributes such technical information at home and abroad as may be helpful to the Chief of Naval Operations and to the various bureaus in drafting war plans and improving the efficiency of *personnel* and material; (3) the Office of Gunnery Exercises and Engineering Performances, which frames the conditions of firing and steaming evolutions to be performed by the Fleet, examines reports on these subjects, and awards prizes and commendations for conspicuously good results; (4) the Naval Communication Service, which operates all the telegraph and cable services under naval control, determines wave lengths for use by commercial stations with a view to preventing interference with naval messages, and is responsible in

time of war for the cable censorship; (5) Office of the Director of Naval Aviation, who superintends the development of naval air work and has charge of the training of *personnel* for this branch.

The heads of the seven bureaus comprising the Navy Department are all naval officers, who take the rank of Rear-Admiral while so employed. The duties and functions of the various bureaus may be summarised as follows:—The Bureau of Navigation attends to all matters concerning the *personnel* of the Navy, such as enlistment, appointments, promotions, welfare, and conditions of service, and is responsible also for the hydrographical work of the Navy. The Bureau of Construction and Repair, presided over by the Chief Constructor, deals with all questions touching the design, construction, repair, and upkeep of naval vessels. The Bureau of Ordnance designs, places contracts for, or itself manufactures naval guns, projectiles, armour, torpedoes, powder, and all ordnance accessories; it administers the torpedo stations, naval proving grounds, and ammunition depots on shore. The Bureau of Steam Engineering designs, builds, installs, and repairs the propelling and auxiliary machinery, the interior communications, and the wireless equipment of warships and other vessels belonging to the Navy. It has recently been charged with similar duties in connection with naval aviation, and is now in control of the new laboratory for engineering and metallurgical experiments. The Bureau of Yards and Docks has duties that embrace all matters bearing upon the planning and construction of naval works, such as docks, marine railways, building slips, harbour-works, quays, etc. In general the work of this Bureau is performed by officers of the

Corps of Civil Engineers, United States Navy. The Bureau of Supplies and Accounts is responsible for the purchase, storage, care, and distribution of all naval supplies other than ordnance material, but including provisions, clothing, and miscellaneous stores, under the naval supply fund, which is administered by the Paymaster-General of the Navy. This official attends to the purchase of coal, oil-fuel, and lubricants for the entire service, and has charge of the Navy's pay-roll. Subordinate to him are (1) the Office of the Judge Advocate-General, (2) the Office of the Solicitor, and (3) the Major-General Commandant of the Marine Corps, whose respective functions are sufficiently indicated by the titles. The Bureau of Medicine and Surgery is responsible for the upkeep and operation of naval hospitals, and generally for the hygienic and sanitary requirements of the service. It is consulted in regard to such features in the design of new hospital ships as relate to the care of sick and wounded.

The above system of administration has been in force for many years, and is considered to have demonstrated its efficiency in all circumstances. It has stood the test of two wars without exhibiting any serious defect. Most of the American officers who visited England during the war and made a careful study of British Admiralty organisation returned home convinced that their own system was in no way inferior, for the purposes either of peace or war, having regard to the peculiar conditions which obtain in the United States.

There are twenty-eight dockyards and naval ports used by the United States Navy, nineteen of which are situated on the Atlantic Ocean, the Gulf,

or the Caribbean Sea, and the remaining nine on the Western Coast or in the Pacific. The principal Navy Yards are those at Portsmouth (New Hampshire), Boston, New York, Philadelphia, Norfolk (Virginia), Charleston (South Carolina), Mare Island (California), Puget Sound (Washington), Pearl Harbour (Hawaii), and Cavite, in the Philippine Islands. Yards of secondary importance exist at Pensacola and Key West (Florida), New Orleans, and Olongapo (Philippines). There is also a Navy Yard at Washington (District of Columbia) which is principally engaged in the manufacture of ordnance. In accordance with the scheme of making the Navy less dependent upon private interests for the building of its ships, six of the yards have been modernised and so equipped that they will in the near future be able to undertake the construction of Dreadnoughts ; while several other yards are, or shortly will be, in a position to build vessels up to the light-cruiser category. The Navy Department already manufactures most of its own guns, and hopes when the State factories are in full working order to produce practically all its own armour plate and projectiles. Whether this policy of discouraging the private armament industry will prove entirely advantageous to the national interest is seriously questioned in America, where it is recognised that but for the assistance given by the plants owned by private firms, the Navy during the late war would have been quite unable to cope with the immense demand for materials of every description. The idea of a self-contained and self-providing Navy appears to have been a pet scheme of Mr. Daniels, which may not appeal so strongly to his successor in office.

While on this subject it will be opportune to

correct certain fallacies which prevail abroad in regard to the supposed exorbitant price which America has to pay for her measure of sea-power. In actual fact the principal items of expense in the United States Navy are no heavier than in England, and in some important respects they are considerably lighter. America for some years now has been building her battleships as cheaply as England has; indeed, the official statistics indicate that she builds them at a lower cost. A few examples may be given. The battleship *Utah*, of 21,825 tons, launched in 1909, cost £1,701,400, as compared with £1,730,000 for H.M.S. *Colossus*, of 20,000 tons, launched in the following year. The battleship *Texas*, 27,000 tons, launched in 1912, cost complete £2,194,000; while the total cost of H.M.S. *King George V.*, of 23,000 tons, launched in 1911, was £1,965,000. The battleship *Pennsylvania*, 31,400 tons, launched 1915, cost £2,678,000, as against £2,500,000 for H.M.S. *Queen Elizabeth*, 27,500 tons, put afloat in 1913. For still later ships the comparative figures are: battleship *New Mexico*, 32,000 tons, launched 1917, total cost £2,541,000; H.M.S. *Royal Sovereign*, 25,750 tons, launched 1915, total cost £2,680,000. Ton for ton, therefore, the American battleship is built more cheaply than the British. The truth is that expenditure on naval contracts in recent years has been very rigidly controlled by the Navy Department, with the result that prices for material, which used to be abnormally inflated by methods well known to the profiteer, have been substantially reduced without detriment to efficiency. The average yearly cost of maintaining American warships in full commission, including pay of officers and men, repairs to hull, machinery, etc., is as follows:

Dreadnought battleship, £323,300; pre-Dreadnought battleship, £206,300; armoured cruiser, £206,110; first-class cruiser, £177,320; second-class cruiser, £154,400; third-class cruiser, £86,520; destroyer, £43,400; submarine, £14,840. The corresponding figures for the British Navy are not available, but according to statements in Parliament the annual cost of keeping the battle-cruiser *Hood*, a ship of exceptional size and speed, in full commission is estimated to be £539,000. It should, however, be mentioned that the figures relating to the maintenance of American ships are for the year 1918, since when the cost of nearly everything required by the Navy has considerably increased. Finally, according to official statistics issued at Washington, the American Navy, even before the war, obtained its armour at a lower figure than Great Britain had to pay, the respective prices per ton in 1914 being: United States, side armour £85, turret armour £99; Great Britain, side armour £100, turret armour £138. In the new battleships *Colorado* and *Washington*, not yet completed, the heaviest armour is to cost £157 and the lightest armour £79 per ton, the average price of five different types of armour fitted to these ships working out at £102 per ton. But enough has been said to prove that the United States obtains good value for the money it spends on naval defence, and even pays less for certain important items than the prevailing price in Great Britain.

As we have seen, the great majority of the American naval dockyards and stations are situated on the Eastern, or Atlantic, littoral. On the Pacific side there is a serious dearth of such establishments. Here the premier yard is that at Mare

Island in Vallejo Bay, but in view of the limited depth of water, which makes the port inaccessible to deep-draught ships unless the dredgers are kept continually at work, Mare Island will probably decline in importance. On the other hand, the Bremerton Navy Yard, on Puget Sound, has been recommended for development into a large, well-found base at a cost of nearly £9,000,000. It is proposed to create a first-class fleet base in San Francisco Bay, and destroyer, submarine, and aircraft stations at other points along the Pacific seaboard, viz. at San Diego and San Pedro (California), at Tongue Point, on the Columbia River, Oregon, and at Ediz Hook, State of Washington. The whole question of providing base and dock accommodation for a large fleet in the Pacific was investigated in 1919 by a special board of inspection. They found that Bremerton was the only deep-water naval dockyard on the Pacific Coast which could be made available within the next two or three years; and as a great fleet is already stationed in those waters they advised the immediate commencement of development work at this yard. Until the improvements at Bremerton are completed—and Congress has not yet appropriated funds for the purpose—the new Pacific Fleet as a whole cannot be kept in good condition and repair on its own station. A serious matter even in peace, the lack of dock and naval magazines on the Western Coast might prove disastrous in war. This reluctance to vote money for the less spectacular requisites of naval defence is not peculiar to the United States. As Lord Jellicoe has shrewdly observed, docks and harbour works do not make the same appeal to the imagination as Dreadnoughts, and their timely provision is in

consequence too often neglected. The situation that existed at Scapa Flow in the early months of the war, when the Grand Fleet found its chief war base totally lacking in dockyard resources, has been repeated to some extent in the case of the new American Pacific Fleet, though fortunately for the latter it did not have to plunge straightway into war.

Whether it was wise to send a great fleet to the Pacific before adequate bases had been prepared for it is a point on which opinions differ; but it was not done until the arguments for and against such a move had been carefully weighed. It was hoped by the Government that the arrival of a powerful fleet would calm the fears of the Pacific Coast communities, and that the consciousness of immunity from attack would gradually incline them to assume a less provocative attitude towards Japan. It was anticipated also that the actual presence of the fleet would rouse Congress to the necessity of providing without further delay for the proper maintenance of the ships. But however generous and energetic Congress may eventually show itself to be in this matter, years must elapse ere the Pacific Fleet has at its disposal a sufficient number of bases on the continental mainland. The question of naval stations in the distant regions of the Pacific is, however, far more serious. In the whole of the American insular possessions there is but one dock capable of taking a Dreadnought, namely, at Pearl Harbour, Hawaii. Built of granite and concrete, and completed in August 1919, this dock has a length of 1000 ft. and a width at coping of 138 ft. There are small docks in the Philippines, at Cavite, Olongapo, and Polloc, but none of any use to modern capital ships. The strategical importance of Hawaii is self-evident.

It is undoubtedly the key position of the entire Eastern Pacific area, and Pearl Harbour, Honolulu, is the only site in the Hawaiian Islands which is suitable for expansion into a first-class naval base. The board of inspection that visited Pearl Harbour in 1919 reported its dock, repair, and magazine accommodation to be entirely insufficient for the needs of the Pacific Fleet in time of peace, ' and, of course, totally inadequate to take care of the whole Fleet in any movement, offensive or defensive, across the Pacific.' In submitting an extensive scheme for enlarging and improving this base, they strongly advocated the completion of the work in a period of five years or less. The board's proposals include the construction of two concrete piers, 1800 and 1000 ft. long respectively ; the erection of large foundries, machine and boiler shops, magazines, oil-fuel depots, and harbour railways ; the excavation of a new dry dock similar to the existing one but with increased depth of water ; the creation of complete submarine and aviation bases, and the dredging of a sufficient area to the north and west of Ford Island to provide anchorage for a squadron of eight Dreadnoughts. The board further advised that the Government and the local authorities should be encouraged and assisted to develop the commercial harbour of Honolulu, in order that it might be available for the use of naval vessels in time of war. It was realised that the expense involved by all these suggested improvements would be formidable, but, as the board pointed out, the total cost need not exceed that of a single modern battleship, and in their opinion it would add more to the efficiency of the Fleet than would the building of a whole division of such ships.

But the conversion of Pearl Harbour into a great naval base, although of inestimable value as regards the control of the North-Eastern Pacific, would not guarantee the safety of American possessions in the Western Pacific. From San Francisco to Pearl Harbour is a distance of only 2100 miles, but from Pearl Harbour to the Philippines the distance is 4770 miles. A fleet operating from Hawaii could not, therefore, extend any real measure of protection to the Philippines, were the latter to be menaced by Japan, whose naval ports are within 1400 miles of Manila. The dockyard at Cavite, Manila Bay, the principal naval station in the Philippines, is to-day in much the same condition in which it was left more than twenty years ago by the Spaniards, who utilised it merely for the repair of small vessels. It is quite incapable of supplying the bare needs of a modern battleship, let alone a whole fleet of these vessels. Olongapo, another Philippine base, has a 500-ft. floating dock large enough to take a pre-Dreadnought battleship, but the facilities for repair are very limited. Moreover, as will appear later, there are powerful objections from the strategical point of view to founding a great naval station anywhere in the Philippines. The natural *point d'appui* for a fleet charged with the protection of these islands is Guam, the southernmost and largest of the Marianne or Ladrone Archipelago, which lies 1500 miles to the westward of Manila. It is not the fault of American strategists that this vitally important base, which has been in American possession since 1899, still remains unfortified and without any resources for supplying the wants of a fleet. Among the other Pacific stations used by the United States Navy are Midway Island, lying about

700 miles north-west of Hawaii; Wake Island, situated in mid-Pacific some 2000 miles west of Hawaii; Tutuila (Samoa), and the Alaskan port of Sitka. Small reserves of coal and oil are kept at most of these ports, but there are no docks or repairing facilities of any description.

During the late war in the North Sea the British Navy had at its disposal on the east coast of Great Britain a number of large docks owned by private firms. This is an advantage of which the American Pacific Fleet is deprived. Along the entire Pacific seaboard there is only one private dock large enough to accommodate a modern battleship, this being owned by the Union Iron Works of San Francisco. Thus, including those at Mare Island, Bremerton, and Pearl Harbour, the number of docks available for the Dreadnoughts of the Pacific Fleet is limited to four. Even were the Fleet to remain at its present strength of eight Dreadnoughts, this provision would be scarcely sufficient; but it is well known that the Government intends, as new vessels pass into service, to augment the Pacific Fleet by many more units of great power. It has been announced on good authority that four out of the six new battle-cruisers will be sent to the Western Coast as soon as they are completed, leaving only two available for service with the Atlantic Fleet. Similarly, the first group of 16-in. gun battleships will join the Pacific Fleet upon completion. It is hoped that by the year 1924 this Fleet will consist of twelve battleships and four battle-cruisers, all of the latest and most powerful design. But unless steps are speedily taken to increase the dockyard and base facilities on the Western Coast, the actual strength of the Pacific Fleet at any given moment is likely to be

well below this total, owing to the absence of ships undergoing at Atlantic ports the repairs and refits that could not be carried out on their own station.

The naval ports on the Atlantic Coast are in a better position to deal with such work, though even here the accommodation for ships of the latest types is strictly limited. The Navy yard at Norfolk, Va., possesses one dock able to take ships up to 1000 ft. in length, and a second one large enough to receive the smaller class of Dreadnoughts. At the New York yard there are two docks for Dreadnought battleships, neither of which, however, is large enough to contain a battle-cruiser. The Boston yard has one dock for Dreadnought battleships, and at Philadelphia there are two docks, the second being available for battle-cruisers. The Portsmouth, N.H., yard has one Dreadnought battleship dock. On the whole the provision of dockyard facilities has not kept pace with the expansion of the United States Fleet, which in this respect is not nearly so well off as the British Navy. In the event of a great naval action, resulting in damage to numerous large ships, there would inevitably be serious delay in reconditioning the Fleet, for vessels requiring to be docked would have to wait their turn. From the strictly practical point of view the United States, by disbursing several millions on dockyard improvements, would be increasing the war efficiency of the Navy to a far greater degree than if the same amount of money were spent on new ships.

CHAPTER IV

THE UNITED STATES NAVY: MEN AND MATERIAL

THE *personnel* of the United States Navy underwent a very great expansion during the late war. On the 1st of April 1917, the establishment numbered 4376 officers and 62,667 men; by the 1st of November 1918, it had increased to 10,400 officers and 220,000 men. Within the same period the naval reserve forces, which were practically non-existent in April 1917, had reached the imposing total of 20,000 officers and 285,000 men. No sooner had the Armistice been signed than demobilisation set in at an extraordinary pace. Twelve months later the reserves had disappeared and the regular establishment had been reduced to 160,000 officers and men, a total insufficient to provide complements for all the ships remaining in commission. At this date the authorities endeavoured to check the rapid wastage of man-power by launching a vigorous recruiting campaign. Apparently it did not meet with great success, for in March 1920 it was admitted by the Secretary that the establishment was down to 103,000 men. A few months before this he had informed the Naval Committee of Congress that the Fleet would be seriously crippled if its *personnel* were reduced to 150,000. The gravity of the crisis which had thus arisen in regard to the supply of men was revealed by Rear-Admiral Washington, chief of the Bureau of Navigation, in

his evidence before the committee in April 1920. The deficiency, he said, amounted to 3765 officers and 68,000 men. The recruiting staff had been enlarged to a figure never previously attained, but in spite of this the retirements, monthly discharges, and desertions far exceeded the number of new recruits enlisted. For the Battle Fleet alone a total of 1500 regular officers was required, whereas the actual number at that date was only 900. The situation would become more acute when the eighteen new capital ships, due to be completed in 1923-24, were ready for service, as these would require a further 1500 officers. For the older battleships in service 1500 officers were needed, but only 440 were then available. Conditions, however, were much worse in the cruiser squadrons, where the shortage of officers reached 80 per cent. Eight hundred and seventy-five officers were distributed among the destroyer flotillas instead of the required quota of 1800, and the 88 submarines in service had only 270 officers instead of the authorised total of 1500. Equally startling evidence was tendered by other witnesses before the committee. Rear-Admiral Coontz stated that the only vessels which had their proper complements on board were those serving in European waters or in China, and a few gunboats in Mexican waters. The Pacific Fleet was terribly short-handed, while the ships of the Atlantic Fleet that left for Cuba to carry out tactical exercises had to sail with less than 80 per cent. of their complements on board, and owing to the shortage of stokers the speed of the Fleet was limited to ten knots. At that very moment, Admiral Coontz declared, two ships which had been assigned to the Pacific Fleet were held up in Atlantic ports because no crews

were available for them. Admiral Plunkett, another witness, declared that the shortage of ranks and ratings had made the Fleet ' but a wreck of what it formerly was.' Finally, Rear-Admiral Washington, on being recalled, stated that Congress would have to increase the pay of both officers and men very substantially if the Navy were to be saved from disaster. Desertions, he added, had increased to an alarming extent. During the latter half of 1919 the cases of desertion totalled 4666, while there had been 1663 cases in the first two months of 1920. Upwards of 1000 officers had resigned since the Armistice, and ' if these conditions continue, by 1921 not only will the Navy be undermanned, but 90 per cent. of those on the list of officers will be inexperienced boys.' Congress was sufficiently impressed by these grave statements to sanction the payment of a bonus to officers and men, but the question of increasing the rates of naval pay was deferred. More recently there appears to have been a marked improvement in naval recruiting, but at the beginning of 1921 the *personnel* was still 20,000 or 30,000 below the authorised total, and the Fleets both in the Atlantic and Pacific were correspondingly short-handed.

The reason for this state of affairs is not far to seek. The American rates of naval pay, generous as they are according to European ideas, are much below the standard of wages ruling ashore, and many young Americans with an inclination towards the sea are deterred from joining the Navy by the fear that their prospects in after life would be prejudiced thereby. To overcome this obstacle the Navy Department, for several years past, has been holding out special inducements of an educational

nature. Besides the ordinary and specialised training in naval routine, the young seamen undergo a very sound course of general education, which, together with the professional and technical knowledge they acquire in the ordinary run of their work, enables them on leaving the service to adapt themselves without difficulty to a new career. It was in this direction that Mr. Daniels' administration proved most successful. That he raised the level of education among the lower-deck *personnel* to a very remarkable height is not disputed even by his bitterest critics. He would, indeed, have gone much further in his zeal for *personnel* reforms, but for the growing opposition that made itself manifest towards the end of his term of office. It was his professed aim to break down the barriers that separated the commissioned officer from the seaman by instituting a scheme of common entry, under which every prospective officer would have to serve at least a year on the lower deck. In his own words, ' No officer can command so well as the man of ability and knowledge, who knows every nook and corner of the service, from polishing brass on board ship to the highest strategy and tactics.' But Mr. Daniels did not succeed in carrying out this idea. Some years previously he had also been forced to abandon the novel plan of abolishing the wardroom and providing a common mess for ranks and ratings, a project that encountered fierce opposition from both sides, and particularly from the men, who considered that their liberty would be interfered with if their officers were continually present among them.

The American naval officer of to-day is zealous, hard-working, and scientific to his finger-tips. The

curriculum at the Annapolis Naval Academy is extraordinarily comprehensive and severe, rivalling in this respect the course at the German naval colleges before the war. Appointments to the Academy are largely in the hands of Congress, each Senator or Representative being privileged to name three candidates, while others are nominated by the President, usually from among the sons of officers of the Army and Navy. The law hitherto has authorised the appointment each year of fifteen enlisted men to graduate for commissions. The course at Annapolis is four years, examinations being held at the conclusion of each academic term. During the summer, midshipmen of the first, second, and third classes go to sea for about three months. On graduating from the Academy they are commissioned as ensigns—a rank equivalent so far as executive authority is concerned to that of midshipman in the British Navy, though nominally equal to that of sub-lieutenant. The pay of a midshipman is £120 a year, commencing at the date of his admission, and is sufficient to meet all his expenses while at the Naval Academy. He must, however, deposit on entry the sum of £58, to be spent on textbooks and clothing, which become his own property. The slowness of promotion has always been a sore point with American naval officers. Up to 1916 it was governed entirely by seniority, but in that year legislation was passed empowering the Navy Department to promote officers who showed conspicuous ability, regardless of the place they occupied on their respective lists. It was hoped that this innovation would tend to reduce the average age of officers in the higher ranks, which is considerably above that of officers of corresponding rank in the

British and Japanese navies. A Naval War College has existed at Newport, Rhode Island, since 1884. The late Admiral Alfred T. Mahan was associated with this college from the first, joining its staff at the close of that year, and it was there that he wrote many of his famous works on sea-power. The present head of the college is Admiral William S. Sims, who commanded the American naval forces in Europe during the war, and is one of the best known and most highly esteemed officers in the service.

The idea that 'foreigners' constitute a large proportion of the American lower-deck *personnel* is a pure delusion. An analysis of the naval roster, corrected to July 1919, shows the foreign element to be negligible. The figures are as follows: native-born, 95·61 per cent.; naturalised citizens, 2·37; aliens, 0·16; natives of colonial possessions, 1·62 per cent. The term of enlistment is four years, and is restricted, save in exceptional cases, to young men between the ages of 17 and 25. Immediately after being sworn in the new recruit—rated as an 'apprentice seaman'—is sent to one of the naval training stations and admitted to the detention camp, where he remains under observation at least three weeks to make sure that he is not suffering from any contagious disease. Here he is given preliminary instruction, being taught 'personal cleanliness,' how to scrub and wash his clothes, mend his garments, and, in brief, to become independent and self-reliant. At the end of the three weeks he becomes an ordinary member of the training station. There are four of these establishments—at Newport (R.I.), Norfolk (Va.), the Great Lakes, and San Francisco. The housing accommodation is

thoroughly modern, and each station has been laid out with a special view to the health and comfort of the men. Here they go through a course of training which includes gunnery, battalion drill, practice with small-arms, signalling, physical drill, elementary seamanship, and handling boats. Both the duration and character of the course depends upon circumstances, for it frequently happens that an urgent demand for men to complete the crew of a ship going into commission makes it necessary to abbreviate the training period. Recruits who possess some knowledge of a trade receive special instruction in the Navy schools for electrical engineering, wireless telegraphy, artificer work, etc. Contrary to a belief that is widely held abroad, discipline in the United States Navy is strict, and in no Navy is disrespectful or mutinous conduct more promptly punished. There is, however, less formality in the intercourse between officers and men than is customary in other services. Great care and forethought are devoted to the welfare of the American bluejacket. Judged by European standards, the pay is liberal. The men's quarters in all but the oldest ships are quite exceptionally commodious, well-ventilated, and heated, and the rations are unique both as to quality and quantity.

In order to relieve the congestion at the shore establishments, due to the sudden expansion of *personnel* during the war, the Atlantic Fleet became for the time being a huge training school. New recruits were sent at once on board the ships to take the place of experienced men who had been detailed for duty in the war zone. As fast as the newcomers could be passed through a brief course of intensive training they were transferred to armed merchant-

men, new warships, or transports, their places being taken by other raw recruits. During this period all the American ships in European waters, and particularly the destroyers, were necessarily used for the purpose of training inexperienced officers and men while carrying on actual operations against the enemy. It was realised by the authorities that in order to ensure the highest efficiency of the service as a whole, the widest possible distribution of skilled *personnel* was necessary. For example, all the destroyers serving in European waters were fitted to carry extra officers and ratings, and some of these small craft were uncomfortably overcrowded. Nucleus crews, formed of officers, petty officers, and principal skilled ratings, were detached from each destroyer after a certain term of war service and sent back to the United States to commission boats freshly delivered from the builders' yards. Notwithstanding these unconventional methods the American flotillas in Europe were maintained in an admirable state of efficiency.

The strength of the United States Navy in January 1921, including all completed ships on the official register, is shown in the following table:

Dreadnought battleships	19
Pre-Dreadnought battleships	18
Armoured cruisers	8
Monitors	6
Cruisers, first class	4
Cruisers, second class	4
Cruisers, third class	14
Destroyers	300
Submarines	115
Gunboats	32
Patrol vessels ('Eagle' boats)	60

Submarine chasers	50 (about) [1]
Tugs and Minesweepers	100 [1]
Fuel ships	35
Special auxiliaries	51 [1]

Vessels under construction, all of which are due to be completed before the end of 1923, are as follows:

Dreadnought battleships	10
Battle-cruisers	6
Scout-cruisers	10
Destroyers	17
Submarines	39

In three years' time, therefore, the Navy will include thirty-five capital ships of the Dreadnought type.

American naval construction has always been marked by originality of design. To the United States belongs the distinction of having built the first warship to be propelled by steam. This was the floating battery *Demologos*, designed by Robert Fulton in 1813. The necessary funds having been voted by Congress, work on the vessel was begun in the year following. She was intended to protect New York from attack by the British Fleet, but as the war came to an end before she was finished the powers of this remarkable vessel were never put to the test. The structure consisted of two separate hulls, which were held together by the decks and girders, the intervening space of 15 feet being occupied by a paddle wheel. On one side was a single-cylinder steam engine, on the other a copper boiler. An armament of twenty 32-pounder guns

[1] The actual number of these vessels now in service is probably much below the totals given.

was mounted on the main deck, the sides of which were some 5 ft. in thickness, and therefore impenetrable to ordinary round shot. These guns were to fire red-hot shot, provision being made for heating the projectiles in the boiler furnace. The *Demologos* was not completed till 1815, when she carried out some very successful trials, attaining a speed of 5 knots. It was found that the machinery was in no way affected by the concussion of gunfire. Twenty-five years later, when steam-driven warships had ceased to be a novelty, a further notable advance in the development of naval architecture was made by two American engineers, the brothers Stevens, who submitted to their Government the designs for a large ironclad ship. This was in 1841, but delays arose in connection with appropriating money, and the ship was not actually laid down till 1854. The *Stevens Battery*, as this remarkable vessel was named, never reached completion, but the design is of particular interest because it incorporated several features that were widely adopted in later years. Built of iron, the vessel displaced 6000 tons, and had engines of 8600 horse-power driving twin screws, a speed of 17 knots being anticipated. The boilers and engines were completely protected by a sloping iron deck, set at such an angle that the heaviest shot would have glanced off without penetrating. Above this deck was the battery, armed with five 15-in. smooth-bore and two 10-in. rifled guns, constituting the heaviest ordnance then in existence. All these weapons were on revolving carriages, which gave them a wide arc of fire. Work on the ship was continued into the Seventies; but by then the design was considered to have become obsolete, and the unfinished hull was sold.

Meanwhile, however, the Civil War had been fought, in the course of which there had appeared a type of ship, quite unique in design, which was destined to exert a profound influence on future naval construction. This was the famous *Monitor*, planned and built by John Ericsson, a Swedish engineer who had made his home in the United States. Formidable as the monitor type unquestionably was for purposes of coast defence, its qualities were overrated in America, where for nearly thirty years no other type of armoured ship was built. The trans-Atlantic voyage of the *Miantonomoh*, a large double-turreted monitor, in 1866, encouraged the erroneous idea that such vessels could perform all the functions of sea-going men-of-war and yet make short work of the larger and more expensive ironclad frigates and battleships that foreign nations considered to be indispensable. This misconception persisted for a generation, and was probably no less responsible than the parsimony of Congress for the delay in renovating the American Navy. Some account has been given in the previous chapter of the earliest vessels of the new Navy. From 1896 onward American naval shipbuilding followed conventional lines, diverging only in respect of the unusual concentration of gun-power in ships of moderate dimensions. To this feature the utmost importance has always been attached by American naval opinion, which has never forgotten the lessons of the War of 1812, when the heavily-armed frigates of the young Republic emerged victorious from a series of duels, chiefly by virtue of their superior hitting power. The result is that a comparison between American and foreign battleships at any period within the past

twenty-five years invariably shows the former to possess the heaviest armament in proportion to displacement.

Since it is unlikely that the pre-Dreadnought battleships remaining on the American Navy List would be employed for major operations in the event of war, a very brief description of these vessels will suffice. The three oldest are the *Indiana*, *Massachusetts*,[1] and *Oregon*. All three were laid down in 1891 and commissioned in 1895-96. They can still steam at 15½ to 16 knots, and the original heavy armament of four 13-in. and eight 8-in. guns of obsolete model remains on board. To the same generic type belongs the *Iowa*,[2] which was begun in 1893. Her present speed is about 16 knots, and she is armed with four 12-in. and eight 8-in. guns. These four ships will be used as targets or sold out of the service at an early date. Nor are they likely to be long survived by the *Kearsarge* and *Kentucky*, two vessels of common design launched in 1898, and of historical interest as the first ships of any navy to have super-imposed turrets. Their heavy armament is identical with that of the *Indiana*, and their present speed is not above 15 knots. In the *Alabama*, *Illinois*, and *Wisconsin*, of 11,550 tons, which went afloat also in 1898, the mixed battery of heavy guns was given up and the main armament limited to four 13-in., in conjunction with a numerous array of 6-in. and small quick-firing guns. These vessels, which can steam at 16 knots, carry very thick armour on the waterline and turrets, another

[1] *Indiana* and *Massachusetts* are now officially designated 'Coast Battleships' Nos. 1 and 2, their names having been appropriated for two of the new ships under construction.

[2] Now 'Coast Battleship No. 4.'

distinctive feature of American battleships, old and new. Next in chronological order come the *Ohio*, *Maine*, and *Missouri*, laid down in 1900. In these vessels the displacement rose to 12,500 tons and the speed to 18 knots, while the main armament was modified to four 12-in. guns, which were, nevertheless, considerably more powerful than the 13-in. weapons of preceding ships. Originally they mounted a secondary armament of sixteen 6-in. quick-firers, but half this number were removed during the war to arm merchant vessels. Five ships —*Virginia*, *New Jersey*, *Georgia*, *Nebraska*, *Rhode Island*—of a larger class were launched in 1904. The speed was increased to 19 knots, and on the relatively modest displacement of 14,950 tons they carried the imposing armament of four 12-in., eight 8-in., and twelve 6-in. guns, with many others of minor calibre. By super-imposing two of the four 8-in. turrets a very powerful concentration of fire was obtained in every direction, a broadside consisting of four 12-in., six 8-in., and six 6-in. guns. But the mounting of heavy guns at a great height above the waterline was not conducive to stability; the ships rolled excessively in rough weather, and their design was not perpetuated.

Pre-Dreadnought development in America culminated in the six ships—*Connecticut*, *Louisiana*, *Minnesota*, *Vermont*, *Kansas*, and *New Hampshire*—launched in 1905-1906, displacing 16,000 tons, with a speed of 18 knots. Mounting no less than four 12-in., eight 8-in., and twelve 7-in. guns, they were extremely formidable ships on paper, but the juxtaposition of 8-in. and 7-in. calibres rendered effective fire control impossible. At the present time eight of the pre-Dreadnought battleships described above

are in full commission—the *Connecticut*, *Kansas*, *Louisiana*, *Minnesota*, and *New Hampshire* serving in the Atlantic Fleet. They will, however, be withdrawn and placed in reserve as soon as new ships of the Dreadnought type are available to replace them. It is the policy of the Navy Department to keep old vessels on the list so long as they retain the least degree of fighting value, in order to have a reserve of ships at hand for subsidiary operations in case of emergency. For this reason no ship is scrapped until it has become absolutely worthless. The value of a numerous pre-Dreadnought reserve, made up of ships unfit to join the Battle Fleet but yet possessing a moderately powerful armament and fair speed, was amply demonstrated in the late war, during which the old battleships of the allied navies performed yeoman service in coastal bombardment, convoy, and trooping work. In 1920 a proposal was made to reconstruct ten or twelve of the best American pre-Dreadnoughts by taking out some of the guns, fitting the hulls with anti-torpedo bulges, and enlarging the living quarters, with a view to making the ships available as 'armed transports.' The cost was estimated at £250,000 per ship, but apparently the scheme has not materialised.

The first Dreadnought battleships to be built in the United States were the *South Carolina* and the *Michigan*. Although they were not laid down before 1906, their design, it is affirmed, antedated that of H.M.S. *Dreadnought*, and they are in consequence often referred to as the first 'all-big-gun' ships to have been projected by any navy in the world. Be this as it may, the principle of a uniform armament of heavy guns is of much older origin, dating, in fact, from 1882, in which year the plans

for a ship to mount four pairs of 16-in. 80-ton guns were evolved by Lord Fisher (then captain of the *Inflexible*) and Sir Philip Watts. The scheme would have necessitated a displacement of 16,000 tons, and was considered by the Admiralty inadmissible on this account. Where the first two American Dreadnoughts may with greater reason claim priority is in the disposition of the main armament. Each ship carries its eight 12-in. guns in four centreline turrets, the inner turret at each end being raised to permit its guns to fire over those in the lower turret. The advantages of this arrangement are self-evident. It enables the entire main armament to be fought on either broadside, and, in the case of four-turret ships, tends to simplify the internal structure of the vessel. Thanks to the axial disposition of their guns, the broadside fire of the *South Carolina* and her sister was no less powerful than that of contemporary foreign Dreadnoughts armed with ten or twelve 12-in. guns, but having one or two turrets placed on the beam, in which position their fire was limited to one side of the ship. The innovation proved completely successful, and was continued in all the later American Dreadnoughts. Other navies did not adopt it until several alternative arrangements had been tried with indifferent success, but eventually the centreline system became universal. Except for this feature the *South Carolina* and *Michigan* have never been considered satisfactory ships. When voting funds for their construction Congress imposed a limit of 16,000 tons displacement. This entailed a ruthless paring down of weight and dimensions, with the result that both ships are cramped, uncomfortable, and very unsteady as gun platforms. Their armour protection

also is inferior to the average American standard, their secondary battery of 3-in. guns is inadequate, and their speed of $18\frac{1}{2}$ knots is too low for modern requirements. They were followed in 1907-1909 by four ships of a greatly improved type, viz. *Delaware*, *North Dakota*, *Utah*, and *Florida*, the first pair displacing 20,000 tons, and the second two 21,825 tons, the speed varying from 20·75 to 21 knots. Their principal armament consists of ten 12-in. guns, associated with a lighter battery of twelve to fourteen 5-in. quick-firers. The *North Dakota* was the first American battleship to be fitted with turbine machinery. This did not give satisfaction, and was replaced in 1916 by turbines of modern design. The next two battleships, *Arkansas* and *Wyoming*, launched in 1911, represented an appreciable advance in dimensions and power, the displacement having increased to 26,000 tons and the main battery to twelve 12-in. guns. In these vessels the armour belt is nearly complete from bow to stern, and there is excellent protection against sub-surface explosion. The *New York* and *Texas*, begun in 1911, were only 1000 tons heavier, but their fighting power was enhanced by the introduction of 14-in. guns, ten of these weapons being mounted in each ship. As the 14-in. projectile weighs 1400 lb., compared with the 870-lb. shell of the 12-in. gun, the gain in weight of fire was considerable. These two ships were fitted with reciprocating engines, owing to the refusal of turbine manufacturers to conform to the Navy Department's specifications. Despite this apparent retrogression in engineering practice, both vessels proved to be most successful steamers, able to make and maintain the contract speed of 21 knots without difficulty.

The *Oklahoma* and *Nevada*, commenced in 1912, mark a further stage in Dreadnought development. As these two vessels are typical of the largest and most powerful American battleships which have so far been commissioned, a fairly detailed account of their characteristics will not be out of place. Although but 500 tons heavier than the preceding ships of the *Texas* class, the *Oklahoma* and her sister are considered to possess much greater fighting power. The length over all is 583 ft., the beam 95 ft. 2 in., draught 28 ft. 6 in., and the displacement 27,500 tons. The machinery installations of the two ships differ materially, that of the *Oklahoma* being of the reciprocating type, while the *Nevada* has Curtis turbines. At the time when the plans were drawn up the American naval authorities were still dubious as to the all-round superiority of the steam turbine for large vessels, mainly because five earlier battleships fitted with turbines had proved less economical in service than had been anticipated. In order to give the rival systems a final test, it was decided to fit the *Nevada* with turbines, and the *Oklahoma* with triple-expansion engines. On trial the *Oklahoma* proved to be rather the faster of the two, but the fact that all later ships were fitted with turbines seems to indicate that the reciprocating engine failed to hold its own in other respects. There are twelve boilers in each ship, housed in six compartments amidships, and occupying less than 80 feet of the length. This compact arrangement made it possible to lead all the uptakes into a single funnel, thus saving much space above and below deck and permitting a more effective distribution of the armament. The boilers are of the oil-burning type, and 2000 tons of this fuel

can be carried in the double bottom. In number and calibre the armament is exactly the same as in the *Texas* class, but in the *Nevada* the main battery of ten 14-in. guns is mounted in two three-gun and two twin turrets, so that there are only four turrets in all, with the result that greater concentration and ease of control are obtained. The triple turrets are stationed on the forecastle and quarter-deck respectively, with the twin turrets firing over them. Twelve 5-in. quick-firers are mounted in an unarmoured battery, and there are two 3-in. high-angle guns for use against aircraft. Two 21-in. torpedo-tubes are fitted below the waterline—the standard torpedo armament of all American Dreadnoughts excepting only the *New York* and *Texas*, which have four tubes apiece.

Apart from the introduction of triple mountings for the heavy guns, the *Nevada* opened a new era in battleship design by reason of her remarkable defensive powers. This feature, indeed, was responsible for the decision to adopt the triple turret, since the tremendous weight of the armour to be carried made it imperative to economise in other directions. In all, no less than 7664 tons of armour were worked into the vessel. The scheme of protection is based on the data derived from the experimental firing at the old battleship *San Marcos*. This experiment demonstrated that against modern big guns none but the thickest plating could be relied on to preserve the vitals of a ship, such as the waterline, turrets, etc., from penetration. Armour of medium strength was holed repeatedly, while thin armour proved worse than useless, serving only to burst the shell, and often being carried in huge fragments into the interior of the ship. After this

practical test the naval authorities decided to equip the new battleships with very heavy armour on the waterline and other sensitive points, but to dispense altogether with the thin armour in which it had been customary to clothe the topsides and secondary battery. This system, first applied to the *Nevada* and her sister, has been retained in all the later battleships. It is believed to guarantee almost perfect protection to the waterline, the boilers and machinery, and to the heavy guns, which are the three essential elements of battle power. The belt of the *Nevada* is 400 ft. in length and 17½ ft. in width. At mean draught it extends from 9 ft. above to 8½ ft. below the surface. For most of its width the belt is 13½ in. thick, but a few feet from the bottom it begins to taper to a minimum thickness of 8 in. Beginning at a point well forward of the first barbette, it continues along the hull at uniform depth and thickness to a distance of 35 ft. abaft the last barbette, where the belt steps downward from 17½ ft. to 8½ ft., and at this width is carried on toward the stern. At each end of the belt solid transverse bulkheads, 13½ in. thick, are fitted. The belt armour is fitted in vertical plates, instead of in two horizontal strips, as was formerly the rule, and which meant a continuous horizontal joint very near the waterline. The vertical method removes this source of weakness. Of the two protective decks, the lower one, starting from the under edge of the belt, slopes up at a thickness of 2 in., decreasing to 1½ in. on the flat. The upper or battery deck has a uniform thickness of 3 in. The main guns are protected by massive armour, the port plates of the lower turrets being no less than 18 in. thick, while those of the upper ones are 16 in.

The walls of the conning-tower are built up of 16-in. plating. To guard against damage to the boiler uptakes and consequent loss of speed, the base of the funnel is enclosed in 13½-in. armour, forming an immense pyramid which rises as high as the upper deck. The battery deck, which contains the 5-in. guns, has no side armour, so that beyond the ordinary ½-in. skin plating there is nothing between these guns and an enemy's projectiles. It is believed that this absence of armour will allow even high-explosive shell to pass through without bursting. But in any case, after witnessing the *San Marcos* tests, American experts are convinced that armour less than 10 in. is useless against modern shell-fire, and only so much dead weight.

In the next two ships, *Pennsylvania* and *Arizona*, the displacement was raised to 31,400 tons, thicker armour being fitted and the number of 14-in. guns increased to twelve. Whatever the defects of the triple turret may be, it unquestionably solves the problem of how to concentrate heavy gun-power without unduly multiplying weight. A full broadside from the *Pennsylvania's* twelve 14-in. guns represents a discharge of 16,800 lb., yet, owing to her triple mountings, there is surprisingly little difference between the weight of her armament and that of the *Wyoming*, which carries twelve 12-in. guns in six turrets and fires a broadside of 10,440 lb. Each of the triple turrets in the *Pennsylvania*, including the three guns, weighs about 2500 tons, of which total the armour represents the largest proportion. This method of mounting was not adopted without some misgiving, especially in view of the adverse reports which had been circulated with regard to the trials of certain European battleships having triple

turrets. An experimental mounting was built and very thoroughly tested. At the first trials the three guns were fired simultaneously. On this occasion the accuracy of the practice left something to be desired, for the air waves set up by the adjacent projectiles tended to divert them from their true line of flight. To overcome this defect, in later trials the right and left-hand guns were fired simultaneously, and the middle gun a fraction of a second later, so that its projectile, following the others, escaped both the lateral blast of the wing guns and the atmospheric disturbance generated by their projectiles. This firing device is now used in a perfected form in all the triple turrets, and is claimed to have removed the one serious objection against the three-gun mounting. Certainly, to judge from a performance by the *Pennsylvania* during her gun trials, the system does not seem to affect the accuracy of long-range practice. Firing at a range of 20,000 yards, this vessel straddled the target with two successive twelve-gun salvos, scoring in all eight direct hits. It should be added that both ship and target were stationary at the time. If both were moving rapidly on opposite courses the delay in firing the middle gun in each turret, however slight, might prejudice the accuracy of the salvo, which would not be absolutely simultaneous. It is improbable, however, that this point has been overlooked, or that nothing has been done to remedy it. All American battleships, back to and including the later pre-Dreadnoughts, are fitted with a firing director, which, so far as results are concerned, appears to resemble the invention of Admiral Sir Percy Scott. Unlike the triple mountings in certain foreign navies, the American type reduces the three

guns to a unit, a common slide containing the three pieces, which are thus elevated or depressed as one gun. This simplifies the turret mechanism and does away with many of the complications which weigh against the three-gun system elsewhere. The roomy interior of the American triple turret allows great freedom of movement to the occupants, and there is little or no interference between the respective gun crews. The ammunition hoists deliver one complete charge and projectile every forty seconds, though it is stated that this rate could be increased to two deliveries per minute. In practice, however, it may be doubted whether the rate of fire from each turret would exceed three rounds per minute.

Two separate types of 14-in. gun are mounted in the American Fleet. The earlier model, mounted in the *New York*, *Texas*, and all later ships down to and including the *Pennsylvania* and *Arizona*, is 45 calibres in length, weighs 63 tons, and fires a 1400-lb. shell, with a muzzle velocity of 2600 ft. per second, which is capable of piercing a 16-in. armour plate at 10,000 yards. The later type, as mounted in the *New Mexico*, *Idaho*, *Mississippi*, *California*, and *Tennessee*, is 50 calibres in length, weighs 81 tons, and fires its 1400-lb. projectile with a much higher velocity, the penetration being proportionately greater. Except for their more powerful guns and a very slight increase in dimensions, the above-mentioned five ships, launched in 1917-19, are practically identical in design with the *Pennsylvania*. Where they mainly differ is in the propelling machinery, for the *New Mexico*, *California*, and *Tennessee* are fitted with turbines and electric reduction gear, a system which does away with the necessity for astern turbines and simplifies the speed

control of the ship. That it has proved successful is evident from the fact that it has been adopted for all the latest capital ships now under construction. It may be interesting to add that the *Pennsylvania's* broadside of 16,800 lb. is considerably heavier than that of any foreign battleship completed before the war, though the Japanese *Fuso*, which was commissioned in 1915, carries the same main armament and thus discharges an equal weight of metal. The *Fuso*, however, lacks the extremely stout protection of the American ship, and the distribution of her twelve heavy guns in six turrets is not likely to facilitate control. In many respects the *Pennsylvania* design, with its weight and volume of fire and massive protection to vital parts, seems admirably adapted to the tactical requirements of the future, the only point open to criticism being the absence of armour over so large an area of the hull.

We come now to the very latest battleships, those, namely, which were authorised by the Navy Act of 1916, but delayed in building by the intervention of war conditions. There are ten in all, divided into two groups, the first comprising the *Maryland*, *Colorado*, *Washington*, and *West Virginia*; the second group containing the *Indiana*, *Iowa*, *Massachusetts*, *Montana*, *North Carolina*, and *South Dakota*. Only the *Maryland* has been launched at the date of writing, and it is improbable that the last of the ten will be finished before the end of 1923. The four ships of the *Maryland* class displace 32,600 tons. In dimensions, armour protection, and speed they differ but little from the *Pennsylvania* type, but the armament is altered to eight 16-in. guns in four turrets. What this change signifies in regard to fighting power is revealed by the following facts.

The 14-in. 50 calibre gun is 50 by 14 in.,—700 in., or 58⅓ ft. long. In describing a gun the diameter of the bore and its length in calibres are invariably given; that is, the number of times the diameter of the bore is contained in the total length. The 16-in. 50 calibre gun is 800 in., or 66⅔ ft. long, an increase in length of about 15 per cent., which, combined with the larger bore, results in a 50 per cent. increase of muzzle energy. The 14-in. gun throws a projectile weighing 1400 lb., while that of the 16-in. gun weighs 2100 lb., and, as the muzzle velocity imparted to the projectiles by both guns is 2800 ft. per second, the 16-in. gun is nearly 50 per cent. more powerful than the 14-in. gun. It was originally intended to arm the four *Marylands* with 16-in. 45 calibre guns, but there is some reason to believe that advantage has been taken of the delay in building to substitute the much more powerful 50 calibre weapons. The secondary battery will consist of fourteen 5-in. quick-firers, and there will be, in addition, four anti-aircraft guns. Formidable as these ships are, they will be quite eclipsed by the six later ships of the *Indiana* class, which are in every way the largest and most powerful battleships designed as yet by any nation. Their displacement of 43,200 tons is nearly 11,000 tons more than that of the *Maryland* class, and their speed will be 23 knots, an increase of two knots over the fastest American battleship built previously. No official armour details have been published, but the belt is reputed to be 16 in. and the turrets 18 in. thick. The hull will be protected against torpedo and mine explosion by bulges extending from bow to stern, and associated with an intricate system of internal sub-division. The main armament of

twelve 16-in. 50 calibre guns, disposed in four turrets, will hurl at each broadside a total weight of 25,200 lb., or 11¼ tons of steel and high explosives. This squadron of six ships would therefore be able to concentrate on a single target the fire of no less than seventy-two 16-in. guns, discharging an aggregate of 67½ tons of metal per minute. Figures such as these convey an impressive though imperfect idea of the fighting power vested in the latest American battleships. What they will cost is not yet known, but the bill for each ship can hardly work out at less than £8,000,000. How long their supremacy as the mightiest battleships in the world will go unchallenged remains to be seen. In her four ships of the *Nagato* class Japan will possess a squadron equal in gun-power and superior in speed to the U.S. *Maryland* class, and as two further vessels begun in 1920-21 are reported to have a main armament of twelve 16-in. guns there will apparently be little to choose between the latest battleships of the American and Japanese navies so far as hitting power is concerned.

When all its new ships are ready for service the American Fleet will be stronger in battleships than any other navy. But while the battleship remains, in the opinion of the British Admiralty, 'the unit on which sea-power is built up,' it is not the only element of naval power; and a fleet which consisted of battleships alone would be at a grave disadvantage if opposed by a fleet that included fewer battleships but had its proper quota of secondary and ancillary vessels. This truth was recognised in an official report published in Washington three years ago, from which the following passage is taken: 'It is a notable fact that in every naval

event of consequence which has occurred in the North Sea area the leading parts have been taken by vessels of the battle-cruiser and scout types, and it is evident that had either side lacked such vessels it would have been at a disadvantage. When the battle-cruiser type was first brought out it was argued that it could lie in line with battleships and be used as a battleship upon occasion. Experience of the war, however, seems to indicate that its primary function will be found in independent action, and that if a possible antagonist is possessed of any material number of vessels whose speed enables them to elude the battleships, and which are so powerful that they need not fear torpedo-craft, it is necessary to have the battle-cruiser to cope with them.' The circumstance that the American Navy does not as yet possess a single battle-cruiser or a single modern light-cruiser detracts very appreciably from its power and readiness for war. If naval policy were governed solely, or even mainly, by practical considerations of tactics and strategy, the Americans would now be constructing battle-cruisers and fast light-cruisers to the exclusion of every other type, for it is certain that the want of such ships would most seriously handicap the Fleet in any warlike operations. As it is, the deficiency will be remedied to some extent in 1923 or 1924, when six battle-cruisers and ten scouts now building are due to be commissioned. But in view of the great dimensions of the Battle Fleet proper, this provision of fast ships is manifestly inadequate. The Japanese Navy a few years hence will include 13 battleships and 8 battle-cruisers; the American Navy at the same date will dispose of 29 battleships and 6 battle-cruisers. No one who has studied

the history of the late war will be in doubt as to which of these two fleets has been built up with the clearest perception of tactical and strategical needs. Were the American Navy to become involved in war before the six battle-cruisers are completed, the chances are that it would pay dearly for its past neglect of this type. However, the question thus raised may be more conveniently deferred to a later chapter.

From every point of view the six battle-cruisers *Lexington*, *Constitution*, *Constellation*, *Ranger*, *Saratoga*, and *United States*—names commemorating famous frigates of the early American Navy—are the most interesting vessels in the programme. Since it was first drafted in 1916, the design has undergone such drastic amendment that the ships, when eventually they are completed, will bear only a faint resemblance to the original plan. The most obvious changes may be seen from the following tabulation:

	Original Design (1916).	*Modified Design* (1919).
Length over all	874 ft.	874 ft.
Breadth, extreme	90 ft.	105 ft. 5 in.
Displacement	34,800 tons	43,500 tons
Speed . .	35 knots	33¼ knots
Armament .	Ten 14-in. 50 cal. Eighteen 5-in. 51 cal. Eight 21-in. torpedo tubes (four above water.)	Eight 16-in. 50 cal. Sixteen 6-in. 53 cal. Eight 21-in. torpedo tubes (four above water).

While, therefore, the original length has been maintained, the breadth has been increased by nearly 15½ ft.—due to the fitting of anti-torpedo bulge protection—the displacement by 8700 tons, and the

speed reduced by $1\frac{3}{4}$ knots. The main armament is strengthened by substituting eight 16-in. for the ten 14-in. guns, and the power of the secondary battery has been almost doubled, for the 6-in. gun fires a 105-lb. projectile as compared with the 50-lb. shell of the 5-in. gun. Equally important changes have been made in the protection of the ships. As originally designed they were to have had two tiers of boilers, the upper tier being situated above the waterline, where it would be dangerously exposed to enemy shot. The armour belt was said to be only 6 in. thick, and could therefore have been penetrated at extreme range by heavy projectiles. Nor was there any external defence against under-water explosion. In the spring of 1919, before work had been started on these ships, Admiral Taylor, chief of the Bureau of Construction, and a party of officers visited Great Britain, where they were permitted to make a close inspection of H.M.S. *Hood*. This huge battle-cruiser, then completing on the Clyde, embodied many features which war experience had shown to be desirable. She was a revelation to Admiral Taylor and his colleagues, who apparently decided that the British ship represented the best model for their own battle-cruisers. These were accordingly redesigned, but it is not certain that the massive armour protection of the *Hood* has been reproduced in the American ships. The latter, it is true, are larger by more than 2000 tons; but as their machinery and armament are much heavier it seems scarcely possible that the margin of weight left over has been sufficient to render practicable the fitting of 12-in. armour, such as protects the waterline of the *Hood*. As mentioned above, the first plans were subjected to adverse criticism in the

United States, and this unfavourable comment has not been entirely silenced by the modifications subsequently made. The critics, who include well-known shipbuilders and engineers, point out that in other countries the evolution of the battle-cruiser has been comparatively gradual, and that, despite their fifteen years' experience with this type, the British authorities have not yet come within several thousand tons of the displacement which the American constructors propose to give their very first battle-cruisers. It is argued, therefore, that too much is being attempted for a first essay, and that, in view of the paucity of experience in America with vessels of such large dimensions and high power, the Navy Department's policy is equivalent to a leap in the dark. On the other hand, officials of the Bureau of Construction express confidence that the battle-cruisers will fulfil all expectations and give the United States Navy a homogeneous squadron of six ships combining speed and gun-power in the highest degree attained up to the present. The only foreign vessels that compare with them are the four new Japanese battle-cruisers—*Amagi*, *Akagi*, *Atago*, and *Takao*—which will, it is said, be armed with eight 16-in. guns. Their designed speed is unknown, but has been credibly reported as 33 knots.

Foreign observers have long been puzzled at the failure of the American authorities to make provision for an adequate number of fast light-cruisers, a type of vessel which elsewhere has been regarded as indispensable. During the ten years before the war Great Britain built more than forty such ships, while Germany laid down twenty-two. In the same period the United States built only three. It was in April 1904 that Congress authorised the

construction of three fast cruisers, afterwards known as the *Birmingham*, *Chester*, and *Salem*, and not until August 1916, or more than twelve years later, was any further appropriation made for vessels of this type. The programmes from 1905 to 1915 included battleships, destroyers, and auxiliaries, but the light-cruiser was conspicuously absent. This was not because the naval advisers of the Government had failed to appreciate the high importance of scouting vessels, or overlooked the fact that a fleet without 'eyes' would be terribly handicapped in war. Professional opinion was almost unanimous in demanding fast cruisers. The difficulty lay in persuading Congress that the needs of the Navy did not begin and end with battleships and mosquito craft. Regularly, year after year, the tentative programme of new construction submitted by the Navy Department included one or more scout cruisers, and with equal regularity this item was struck out when the proposals came before the House. As a rule, money was forthcoming for heavy armoured ships and torpedo-craft, both of which appeared to possess an occult fascination for the politicians, possibly because they typified the two extremes of naval material. As a result of this short-sighted policy the United States Fleet finds itself to-day almost entirely destitute of a class of vessel which the test of war has shown to be indispensable. It is doubtful whether any of the ten scout cruisers that were authorised in 1916 and are now under construction will be ready for service before the beginning of 1922.

A favourite argument employed in Congress against the building of fast-steaming cruisers was that the functions for which these vessels were

designed could be performed equally well by destroyers—a heresy which, in pre-war days, was not unknown in certain European countries. On this point Admiral Knight, U.S.N., speaking from long experience, has made the following observations: 'In perfectly smooth water, under very favourable conditions, the destroyer may do very good work as a scout, but that is not its true function. Destroyers are supposed to act in groups, and to hold themselves in readiness, when the scouts have located the enemy and found the main body of his fleet, to make their appearance at night, and do their duty then. We have used the destroyers in our operations at sea, ever since we have been carrying out manœuvres, for scouting purposes, simply because we had nothing else. When destroyers are used for scouting purposes they are overworked. They have to run long distances, often at high speed. They cannot send back word because their wireless apparatus is not powerful enough, and if they run into a heavy sea their speed is cut down. They use up their fuel and they exhaust the crew, and the consequence is that when they gain touch with the enemy the destroyers are not fit to do anything against him. They should be conserved to the last moment, when they are called upon to strike. They should not be occupied in chasing all over the ocean, looking for something, with a view of getting together later and then making a combined torpedo attack. Nothing can be called a scout which has a speed below 25 knots, and a real scout of to-day should have 30 knots.' Judged by Admiral Knight's standard, which is certainly not unreasonable, the American Fleet at present has only three scouts, viz. the vessels of the *Birmingham* class. Old, worn-out,

and feebly armed, they are practically useless for modern operations. In all recent American naval manœuvres the burden of reconnaissance duty has devolved upon the armoured cruisers, ten in number. As these ships range from 9700 to 14,500 tons, they are very expensive to maintain, while their maximum speed of 22 knots is quite inadequate for scouting work. For this service, therefore, the Fleet is almost entirely dependent on its destroyers.

The ten new light-cruisers are due for delivery in 1921, but at the present rate of progress they are not likely to be completed before 1922. All are building to a common design, of which the following are the principal features: length 550 ft., breadth 55 ft., speed 33¼ knots. There will be light armour protection over the boilers, machinery, and magazine spaces, and internal defence against torpedoes. For their tonnage they will not be powerfully armed, the main battery being limited to twelve 6-in. 53 calibre guns. These are so disposed that eight guns can be fought on either broadside; and as six guns are grouped close together at the bow and the remaining six similarly concentrated at the stern, a few lucky hits might put the entire armament out of action. The speed of 33¼ knots is very high for this class of ship, and will, if achieved in service, make these ten cruisers the fastest of their type afloat. Each is to have special apparatus for carrying and launching aeroplanes. The cost per ship has been fixed at £1,500,000, which is approximately the same as that of H.M.S. *Hawkins*, a cruiser nearly 3000 tons larger, with a speed of 31 knots, and an exceptionally powerful armament. It is possible that the American ships will be surpassed in fighting value by the four new cruisers—*Nagara*, *Isudzu*,

Natori, and *Yura*—which Japan commenced in 1920. The latter are reported to be 7000-ton and 34-knot ships, mounting a powerful armament, and possessing a fuel capacity that will give them a steaming radius of 14,000 miles. Japan, at any rate, will have fourteen fast light-cruisers available in 1923, against an American total of ten; and moreover has recently adopted a new programme which includes twelve additional ships of this type. Unless, therefore, the United States lays down many more light-cruisers without delay, her relative inferiority in fast scouts will remain.

Owing to the large number of boats built under the emergency war programmes of 1917-18, the American Navy is well provided with destroyers. Of the total of 316 boats the vast majority are of very recent construction and have been built to a standard design. The displacement averages 1200 tons, the length 310 ft., and the speed 35 knots. They are, therefore, ocean-going vessels, large enough to maintain their speed in any but the heaviest weather, very strongly built, and with a high freeboard. In all but a very few boats the armament comprises four 4-in. guns, one 3-in. anti-aircraft gun, and twelve torpedo-tubes on triple carriages.

The total number of American submarines completed and building is officially given as 154, and of this total 115 boats have been built since 1914. Sixty are designated as 'ocean-going' vessels, the remainder being small boats. The latter are intended chiefly for coastal defence, as substitutes for the shore batteries, which are now considered more or less obsolete, and incapable of keeping a hostile fleet at a respectful distance from the great com-

mercial and naval ports. While the Navy Department publishes a great deal of information about every other type of war vessel, it has always observed strict reticence in regard to its submarines, such details as tonnage, structural dimensions, speed, and armament being kept a close secret.[1] This notwithstanding, the information in question is freely canvassed in the American Press, from which and other sources a general idea of the main features of the submarine flotilla may be gleaned. Whatever may be the case at present, the American submarine service in 1917 was not up to the highest standard of efficiency. Misfortune seems, indeed, to have dogged this branch from its inception. Serious disasters have been rare, but a long succession of minor accidents and breakdowns appear to have undermined American confidence in the practical value of the submersible boat. In his testimony before the Senate Committee in 1920, Rear-Admiral Albert Grant stated that before the United States entered the war he had repeatedly brought the backward condition of the submarine branch to the attention of the Naval Secretary. When, in July 1917, he received orders to prepare twelve of his best submarines for service in Europe, he selected twelve boats, but at the same time declared that none of them was ready for the work in view. His verdict on them was confirmed by the officer who took the first five submarines to Europe. First one and then another had to be towed by the accompanying ships, and most of them proceeded at a snail's pace on one engine. The boat with the best record travelled only 1300 miles under her own power, and one

[1] Since the above was written, official data of completed submarines have been published in Washington.

submarine had to be taken in tow when only three miles out of port. Of the first twelve despatched to Europe, five were without guns, and a number laboured under the disadvantage of fixed periscopes. It is most unlikely that this state of affairs continues to prevail, but in the absence of official data it is difficult to estimate the number of really efficient American submarines available now or in the near future. Probably not more than fifty boats, if as many, are capable of undertaking operations at any great distance from their base. It is believed that plans have been prepared for a series of large, ocean-going submarines, from 1500 to 2000 tons, closely modelled on the German 'U-cruiser' type; but up to the present no money has been voted for their construction. The grave shortage of officers and principal skilled ratings, which is general throughout the American Fleet, is a particularly serious matter for the submarine branch, where efficiency can be attained only by constant practice at sea. As things are, more than half the boats are either laid up, or kept 'in commission' with crews too small to take them to sea. That American submarines, when fully manned and after undergoing a period of practical training, are capable of giving an excellent account of themselves, was demonstrated by the performance of the small American boats based on Berehaven during the war. Although these vessels were of very limited dimensions, they put in long spells of duty at sea and proved to be efficient in every way.

The absence of well-equipped bases in the distant insular possessions of the United States renders the problem of supplying the wants of a Fleet operating in those remote waters one of

supreme importance. For this reason auxiliary craft such as oil-tankers, colliers, and repair ships, have of late years been embodied in every building programme, but the number of these vessels is still far below requirements. Including several not yet completed, there are fifteen large fuel ships, ranging from 11,000 to nearly 20,000 tons; seven smaller fuel ships, from 6000 to 9500 tons; six supply and refrigerator ships, from 4300 to 17,000 tons; six fleet and target repair ships, from 3300 to 12,500 tons; three Navy transports, from 8500 to 10,000 tons; and four hospital ships, from 5700 to 10,000 tons. A number of old cruisers have been assigned as tenders to the destroyer and submarine flotillas. Seventeen further vessels, from 1500 to 13,500 tons, are also employed as tenders and depot ships to these flotillas. The American Fleet does not as yet possess any specially-built aircraft carriers, but the collier *Jupiter*, renamed *Langley*, is being converted to this purpose, and two old armoured cruisers have been fitted with hangars and launching apparatus. The minelaying flotilla is represented by two old cruisers, fourteen converted destroyers, and two or three former merchantmen. Finally, there is a large miscellaneous collection of gunboats, converted yachts, coastguard cruisers, minesweepers, and tugs.

From the foregoing summary it will be seen that the modern United States Navy is exceptionally strong in heavy armoured ships and exceptionally weak in fast cruising ships. It has a large but not excessive complement of destroyers, a limited number of ocean-going submarines, and a reserve of auxiliary vessels sufficient to cope with its requirements in home waters, but wholly inadequate to supply the

bare needs of a fleet operating at a great distance from its bases. It would appear, therefore, that American naval policy up to the present has been guided mainly by considerations of Atlantic and Caribbean strategy; and that very little attempt has been made to forestall the contingency of war in the Pacific, where the conditions would be fundamentally different.

CHAPTER V

JAPANESE SEA-POWER: ITS INCEPTION, GROWTH AND PURPOSE

Concerning as it does a race of islanders, hardy, warlike, and adventurous, who must have fought and traded by sea at a very remote period of their national existence, the early history of Japan is strangely barren of important maritime events. Moreover, legend enters so largely into the compilation that it is impossible to determine where fable ends and fact begins. The first Japanese naval campaign of which a reasonably authentic record has been handed down was undertaken in 1592, the object being the conquest of Korea. For this purpose an army of 200,000 men was assembled at Nagoya and eventually transported to Fusan. As the passage of such a vast body of troops across several hundred miles of water must have entailed the use of thousands of ships, it is evident that the Japanese marine at that time was of no inconsiderable dimensions. But the leaders of the expedition had failed to grasp the first lesson of naval strategy,—that command of the sea is an essential prerequisite of successful oversea invasion. It is uncertain whether or not the entire army was safely transported to Fusan, but that the Japanese suffered a stunning naval defeat at the hands of the Koreans is acknowledged by all their historians. Another point on which con-

temporary accounts are in agreement relates to the use by the Koreans of an ironclad ram, designed by Yi Sun-sin, the Admiral of Chulla. This singular vessel, which must have been the first armoured warship to be built, was known from its appearance as *Kwi-sun*, or 'tortoise boat.' The upper deck was constructed of iron plates, curving down to the waterline at the sides, the bow, and the stern. The bow was fashioned in the shape of a dragon's head, from the jaws of which cannon protruded; while a battery of twelve guns was mounted at the stern. A light flying bridge ran fore and aft, but elsewhere the deck was thickly studded with iron spikes as a protection against boarders. Thanks to her iron deck, the vessel could not be damaged by the feeble cannon then in use, nor could she be set on fire by incendiary missiles. The stem was furnished with a sharp ram, which appears to have been a far deadlier weapon than the guns. This strange sea monster inspired terror among the Japanese, as well it might. Dashing into their midst it sank ship after ship with blows from its iron ram, and finally scattered the invader's fleet with the loss of 500 galleys. Some forty years ago the hull of this 'tortoise boat' was found embedded in the sands at Ko-sun, and descriptions of it were published in the foreign technical Press.

The Japanese owed their introduction to European methods of shipbuilding to an English seaman, Will Adams, of Gillingham, Kent, who was also the first Englishman to land in the country. A Dutch vessel of which he was the pilot came to grief on the Kyushu coast in 1600, and Will Adams, after being imprisoned for a short time, entered the service of Iyeyasu, head of the Tokugawa clan

and founder of the last Shogunate, which ruled Japan for upwards of two and a half centuries. Under Iyeyasu's patronage Adams instructed native craftsmen in the art of shipbuilding on European lines, with such success that in the course of a few years vessels of 100 tons burden were being launched. But shipbuilding, in common with other national industries, soon began to languish under the reactionary policy adopted by Iyeyasu's successor, the Shogun Hidetada, who expelled all foreigners, forbade his own countrymen to go abroad, and thus inaugurated the period of 'splendid isolation' which kept Japan remote from the outer world for 250 years. In 1853 Commodore Perry, with a squadron of four American warships, arrived in Yedo Bay to demand communication with the ruling power. His orders from the American Government were to obtain permission for the establishment in Japan of bases for the American whaling fleet and coaling-stations for the steam packets plying between San Francisco and the free ports of China. The success that eventually attended his mission, and the gradual opening of Japan to foreign influence and trade, are matters of common knowledge. One of the effects of Perry's visit, and of the subsequent operations of British, French, and Russian warships off the coast of Japan, was a reawakening of national interest in maritime affairs. In 1855 the Dutch Government repaid some courtesy it had received from the Shogun by the gift of a small warship. Two years later Queen Victoria presented the same personage with a steam yacht. In the meantime native yards had resumed the construction of ships to European design, under the supervision of Putiatin, a Russian

naval officer, who settled in Japan after his ship had been wrecked at Shimoda in 1854. They began by building trading schooners, but in 1860 the *Chiyogadata*, an armed wooden steamer, was laid down at Nagasaki.

As, however, the home establishments were not yet capable of producing the larger men-of-war which Japan had decided to be necessary, a number of vessels were purchased abroad. In 1858 the screw frigate *Malacca*, of twenty guns, was bought from England and renamed the *Tsukuba*; and during the next ten years six further ships were acquired from America and Europe. The most important of these was the *Adsuma*, an ironclad ram which had been built in France under the name of *Stonewall Jackson* for the Confederate Government during the American Civil War. Japanese seamen soon had an opportunity of displaying their aptitude for handling the new weapons of naval warfare. In 1869, when the country was in the throes of internecine strife between the Imperialists and the Shogunate faction, a naval engagement was fought at Hakodate, in which the Imperial fleet administered a sound drubbing to Yenomoto, the Shogun's admiral. A Dutchman named Haeler, who was present on board the *Adsuma*, flagship of the Imperial squadron, wrote in high praise of the Japanese crew. 'They are,' he said, 'amazingly dexterous at artillery drill. They load their pieces with great care and aim with such precision that few shots are wasted. They have a new set of sighting instruments which were made by Captain Otawa, and are considered to be far superior to the original sights. Before the battle gun practice was held daily, until the men had

learned to go through every manœuvre with the promptitude and assurance of highly-trained artillerists. The steaming of the ships is also very good, though the boilers and engines of several were defective from the beginning. These people, one sees, are born mechanics, who readily imbibe and not seldom improve upon, the teaching of Europeans.' The Japanese, it would seem, had taken to heart the advice tendered by one of their statesmen shortly after the arrival of Commodore Perry's ships. 'As we are inferior to foreigners in the mechanical arts, let us,' he urged, 'have intercourse with foreign nations and learn their drill and methods of waging war. Then, when our nation is amalgamated into one family, we shall be able to make conquests oversea, and award captured territory to those of our warriors who distinguish themselves in battle.'

One of the earliest sea-going warships to be built in Japan was the *Seiki*, which was launched at Yokosuka. This little gunboat, of only 895 tons and a speed of 11 knots, was the first Japanese war vessel to visit England, making the voyage by way of the Suez Canal. Her company included none but Japanese. The Government dockyard of Yokosuka, which built nearly all the smaller vessels of the new Imperial Navy, was laid out in 1865 under the direction of a French engineer, and finished in 1882. Its equipment included two graving docks, three stone slipways for building vessels up to 300 ft. in length; machine, boiler, and erecting shops, a large foundry, and other modern plant. By the year 1880 marine engines of considerable power had already been manufactured at this yard, every department of which was then under Japanese management, and

foreign visitors were impressed by the excellent work it turned out. A technical school for the training of workmen was attached to the yard. So rapid was the progress of shipbuilding in Japan that in the fifteen years from 1870 to 1885, no fewer than 266 steamers were launched, besides many hundreds of schooners and junks. The Imperial Navy, however, continued to rely on foreign builders for its largest warships. In 1876 the central-battery ironclad *Fuso* and two armoured corvettes, *Kon-go* and *Hi-yei*, were ordered in England, all three ships being designed by Sir Edward Reed, the eminent naval constructor. These were followed a few years afterwards by the famous Elswick cruisers *Naniwa* and *Takachiho*, which were among the fastest warships of their period; and somewhat later by the French-built cruisers, *Unebi*, *Itsukushima*, and *Matsushima*. The *Hashidate*, a cruiser of 4277 tons, was built at Yokosuka in 1891. Although the workmanship in this vessel was entirely Japanese, the plans had been drawn in France, whence came also a great part of the structural material and equipment. A somewhat smaller cruiser, the *Akitsushima*, was built at the same yard in 1892. In her case, too, the design was of foreign origin, and most of the steel work, machinery, and fittings were imported. According to the Japanese Navy List of 1895, the seven armoured ships then in service had all been built abroad; but of the twenty-six unarmoured cruising vessels, all but nine had been built in Japan.

The Japanese, however, were shrewd enough to realise that competent officers and seamen were needed no less urgently than ships. When the Imperial Navy was in its earliest stage of develop-

ment they had besought the British Government to lend them the services of a distinguished naval officer to advise them on questions of material, training, and organisation. Admiral Tracy was accordingly sent to Tokyo, where he found the naval authorities only too eager to learn whatever he could teach them. In due course he was succeeded by Admiral Hopkins, and then by Captain John Ingles. Each of these officers left an enduring mark on Japanese naval policy, and a warm tribute has been paid to their work by Count Okuma, the veteran statesman, who wrote:[1] 'We are indebted to Western experts for the inception and subsequent development of our Navy; especially to the British Government for the courteous loan of a number of their capable naval officers to serve as instructors at the cadets' college in Tokyo. The men of deeds and ability that the Imperial Navy now possesses are the direct consequence of the tuition then granted us by British officers.' Although the Japanese have long been independent of foreign tutelage, their Navy still retains unmistakable traces of British influence. The uniform of officers and men is a modification of the British pattern, and many of the ships themselves, externally at least, bear a close resemblance to British men-of-war. On the other hand, the Japanese have always had their own ideas about naval architecture, training, strategy, and tactics, and at no time have they showed a disposition to follow blindly the counsel of their foreign tutors. This independence of thought has been particularly evident in the development of naval material. Japan claims to have been the

[1] Okuma: *History of Fifty Years.* Tokyo, 1907.

pioneer of those tactical ideas which postulate a combination of great speed and fighting power.[1] Hence her penchant for the fast cruiser, mounting a very heavy armament, as represented by the *Itsukushima* class of 1889, and, at a later date, by the armoured cruisers *Asama*, *Tokiwa*, etc. In more recent times she designed, in the *Kon-go* class, the largest and most powerfully armed battle-cruisers in the world. In fact, the very term 'battle-cruiser' may be said to have originated in Japan, where it was applied to the *Asama* class as long ago as 1902. According to Grand-Admiral von Tirpitz, the tactical formations of the Japanese Fleet during the war with Russia in 1904-5 were copied from German naval manœuvres; but this assertion may safely be disregarded as a characteristic specimen of German pretentiousness.

For several years before the war with China the Japanese Navy had been preparing itself for the struggle by incessant training at sea. Special importance was attached to gunnery, torpedo work, and steaming efficiency. During 1893 all ships armed with the new quick-firing guns carried out frequent practice at moving targets, and by the end of the year so much ammunition had been expended that the stocks had fallen dangerously low. Steaming evolutions were performed under conditions approximating to those of actual warfare, with hatches battened down, shell gratings closed, and forced draught in the stokeholds. The machinery of every ship was driven to its utmost capacity; in

[1] Okada: *The War Fleet of Japan*. Tokyo, 1906. This claim will hardly be allowed by those who are conversant with the modern history of naval architecture. The Italian ships *Duilio*, *Dandolo*, *Italia*, and *Lepanto*, which were undoubtedly the forerunners of the modern battle-cruiser, were built more than ten years before the *Itsukushima*.

some cases, indeed, the enthusiasm of the Japanese engineers led them to take liberties with the boilers and engines that would have appalled European experts. Now and again they contrived to obtain a higher speed than the maximum trial figure, but on the other hand this drastic treatment tended eventually to impair the steaming qualities of the ships. Nevertheless, when the war with China broke out the Navy had reached a very high pitch of efficiency. It soon became manifest not only that officers and men had acquired a perfect command of their weapons, but that those who controlled the operations of the Fleet had studied the art of strategy and tactics to some purpose. Mistakes were made, it is true; for the Chinese were able to transport large bodies of troops by sea without molestation from the fast Japanese cruisers, and there were other instances of a faulty conception of the strategy to be pursued. It has, however, been explained by Japanese writers that in this campaign the Navy did not enjoy a free hand. The military chiefs, who were all-powerful, controlled land and sea forces alike, and Vice-Admiral Ito, the naval Commander-in-Chief, was strictly bound by their orders. They could not be expected to appreciate the importance of sea-power; nor, in fact, did the Japanese nation expect great achievements from its seamen. The efficiency of the Fleet had been questioned in the Diet, where its ships were subjected to unfavourable criticism; and there was a widespread belief that the officers, who were drawn mainly from the great Satsuma clan, owed their rank more to family influence than to merit. Conversely, the strength and war readiness of the Chinese Navy were overestimated by Japanese publicists, who wrote

impressively of its powerful ironclads and huge Krupp guns. But events speedily showed these apprehensions to be baseless. In every naval operation of the war the Japanese Fleet displayed its incontestable superiority. The ships, which had been criticised as ill-designed, unseaworthy, and feebly armed, proved more than a match for the vaunted Chinese ironclads. The officers showed themselves masters of the technical side of their profession, and the men proved worthy of such gallant and skilful leadership. But however much the achievements of their Fleet surprised and delighted the people of Japan, foreign observers were impressed more deeply still. On returning to England Captain John Ingles, R.N., the last British naval adviser to the Japanese Government, had spoken in glowing terms of the scientific methods, sound seamanship, and splendid discipline of the young Navy, but his encomiums were discounted by many persons who found it difficult to believe that a nation which had only lately emerged from mediævalism could so quickly adapt itself to the complexities of modern sea warfare. How, it was asked, could warriors who had not long discarded suits of mail and bows and arrows be expected to show any skill in the manipulation of fast cruisers, quick-firing guns, and torpedoes? The truth was that the Japanese Navy for the previous twenty-five years had been developed and trained on progressive lines, and was by no means so lacking in experience as the outer world supposed. Its triumphs in the Chinese War were the result of long and arduous training, of patriotic devotion to duty on the part of all ranks and ratings, and of the wise policy of the Japanese Government in

acquiring the best and latest material that money could buy.

The campaign at sea opened with an incident which showed very clearly that war, as waged by the Japanese, was not an affair of kid gloves and lavender water. The Chinese transport *Kowshing*, with 1200 troops on board, was sunk by the Japanese cruiser *Naniwa*, in circumstances which sent a thrill of horror through the Western world. There were several Europeans on board the *Kowshing*, among them Herr von Hanneken, a Prussian ex-officer, who alleged that the *Naniwa* had not only made no attempt to rescue the drowning Chinese soldiers, but had turned her guns on them while they were struggling in the water. This accusation the Japanese denied; but an impartial investigation of the evidence made it only too clear that they had deliberately failed to observe the dictates of humanity. To the great action off the Yalu River, in which the Japanese Fleet gained a decisive victory over the Chinese, and the subsequent naval operations at Port Arthur and Wei-hai-wei, it is unnecessary to refer at great length. As the first occasion on which high-speed warships, quick-firing ordnance, and smokeless powder had been tested in actual warfare, the Battle of the Yalu evoked world-wide interest, and the lessons it taught had a marked influence on shipbuilding design and tactical doctrines in every navy. The Japanese had boldly taken their unarmoured cruisers into action against powerful ironclads, but the event more than justified their audacity. They had overwhelmed the Chinese with a tornado of shell from their quick-firing guns, which were served with admirable coolness and precision.

Fettered, no doubt, by his orders from the military command, Admiral Ito could not immediately follow up his success; and the Chinese ships that still floated were able to reach Wei-hai-wei. Here, some months later, they were blockaded by the Japanese, who showed extraordinary courage and endurance in their torpedo attacks on the imprisoned ships. The cold was so intense that men in the attacking boats were frozen to death. But in spite of the rigours of the weather and the desperate resistance they encountered, the Japanese torpedo-boats finally weakened the defence to such an extent that the Chinese were compelled to surrender.

Thanks to its splendid work in this war the Navy became very popular in Japan. It had worthily sustained its baptism of fire, and henceforth it received generous treatment from the Diet, which was no longer insensible to the value of sea-power. A further impetus to naval expansion was given by the intervention, in 1895, of the three Powers, Russia, France, and Germany, which robbed Japan of the fruits of victory by forcing her to evacuate the Liaotung Peninsula. Between 1895 and 1904 the Navy was heavily reinforced. Two first-class battleships, the *Fuji* and *Yashima*, which had been ordered in England shortly before the war, were soon followed by other battleships and armoured cruisers, the majority of British construction, though orders for single ships were placed in France and Germany. The principles that actuated Japanese naval policy during this period were clearly expounded by *The Times* correspondent in Tokyo, in a despatch dated the 10th October 1902. 'It must be understood [he wrote] that very few voices were raised

in endorsement of the view that naval construction should be deferred. The general conviction was that the alliance with England, so far from justifying any relaxation of Japan's efforts, imposed upon her the responsibility of more strenuous exertions than ever, both on sea and on shore, since if she hoped for the continuance of a union so essential to the preservation of peace in the East, she must qualify herself to be always counted a valuable ally. There never was, indeed, the slightest chance of the other theory's obtaining public endorsement; it could not find any echo in the heart of a nation so profoundly patriotic as are the Japanese. Very soon, therefore, these feeble suggestions ceased to be audible, and publicists directed their attention entirely to considering, first, what standard should be taken for determining the dimensions of the projected augmentation; and, secondly, from what sources the necessary funds might be obtained. As to the former point, a marked consensus of opinion quickly declared itself; Japan, it was affirmed, must have a Navy equal to the combined Eastern squadrons of any two European Powers—England excepted, of course—and obviously the French and Russian squadrons, being the strongest after the British, were the ones to be considered in that context. The total displacement of Japan's Navy at present is 259,593 tons; but, when fullest allowances are made for old or partially obsolete vessels, it is calculated that of first-class fighting material she could not put into the battle line more than 180,000 tons. Now the Russian squadron represents 157,000 tons and the French 57,000, the two aggregating 214,000 tons. Corrections must be applied, of course, especially in the case of the

Russian squadron. After they have been applied, it results that the advantage as to tonnage and fighting capacity generally is with the Japanese Fleet. But Russia and France are not idle. According to their present programme they will have from 350,000 to 360,000 tons of shipping in the Far East in 1907, or some 300,000 tons of vessels fit for the line of battle. Japan, therefore, must add 120,000 tons to her fleet during the next six years, and that is just what her statesmen contemplate, the details being four battleships, to be built in England; six first-class cruisers to be built in England, Germany, and France; and certain minor craft to be built at home. Of course, it will be understood that no official announcement of such a programme has yet been made. The Diet will be the first to receive the declaration. But the facts may be regarded as tolerably well assured.'

The programme thus forecast was duly introduced and adopted with certain modifications, but only a few of the new vessels were completed in time to take part in the war against Russia, which began on the 10th February 1904. Both sides had long been preparing for a collision which was seen to be inevitable. Since 1900 Russia had made a practice of sending her best ships out to the Far East as soon as they were completed, and of the eighteen battleships and cruisers she had in those waters on the outbreak of war, all but the *Rurik* were of very recent construction. Other ships were building at home, and these, together with the Far Eastern Squadron, gave Russia a decided preponderance over Japan at sea. But the Japanese, who had taken the measure of their future antagonist,

were confident that this numerical inferiority could be made good by superior training, gunnery, and torpedo work. What they really dreaded was the possibility of having to face a hostile coalition, such as had forced them in 1895 to give up the Liaotung Peninsula. This danger was averted by the Alliance with Great Britain, concluded in 1902, and from that time forward preparations for the coming struggle with Russia went on apace. In January 1904 the Japanese Fleet consisted of six battleships and six armoured cruisers, all of fairly recent date; 17 protected cruisers, of which number about half were modern; four new torpedo-gunboats, 20 destroyers, and between 70 and 80 torpedo-boats. A few days after the outbreak of war the Fleet was reinforced by the arrival from Europe of two new armoured cruisers, which had been built in Italy for the Argentine Government. Having been secretly purchased by Japanese agents, they left Genoa on the 9th January and arrived at Yokosuka on the 16th February. Both ships were at once fitted out and commissioned under the names of *Nisshin* and *Kasuga*. In the struggle that ensued Japan was confronted with strategical problems of great difficulty. To achieve decisive results it was essential to transport a great army across the sea and to keep it adequately supplied with fresh drafts, provisions, ammunition, and stores of every description. Since this could not be accomplished so long as the Russian Fleet remained intact and efficient, it was obviously the first concern of the Japanese to destroy the enemy's fleet, or failing that to reduce it to impotence by a close blockade.

The task was no easy one. Not only were the

Russians well supplied with ships, but they had two fortified bases from which to operate. While the bulk of their fleet lay at Port Arthur, there was a division of armoured cruisers at Vladivostok, 1200 miles distant. The Japanese Fleet was not numerous enough to establish a simultaneous blockade of both these ports. It could hope at best to deal with the Port Arthur squadron, and for the time being, therefore, the cruisers at Vladivostok had to be left unwatched. Nor was this the only difficulty. The fact that he had no reserves imposed a severe handicap on Admiral Togo, the Commander-in-Chief. There could be no question of replacing any large ship that came to grief, for the Japanese shipyards were not yet equal to heavy construction and the laws of neutrality forbade the acquisition of warships from abroad during the duration of hostilities. Togo, therefore, had at all costs to avoid the risk of a defeat that would leave him inferior to the enemy. The strategy he pursued in these embarrassing circumstances evoked world-wide admiration. He began operations with a bold and well-planned torpedo attack on the Port Arthur squadron, three of whose best ships were placed *hors de combat* for a period extending from three to six months. On the following day he took his fleet within range of Port Arthur and engaged the Russian ships that came out, inflicting a good deal of damage upon them at the cost of trifling casualties to his own force, no Japanese ship being rendered unfit for action. The result of this energetic offensive was practically to immobilise the main Russian squadron in the Far East, leaving Togo free to detach part of his force to watch the Vladivostok cruisers and, at the same time, to notify his Government that the

transport of the army to Korea might safely begin. He himself remained in the vicinity of Port Arthur, keeping a vigilant eye on the Russians and neglecting no opportunity of doing them further hurt by torpedo attacks, long-range bombardments, and the sowing of mines. Several attempts were also made to seal the harbour by blockships, but in no case with success. The Japanese Fleet itself was by no means immune from loss during these operations. On the contrary, it suffered severely from mines and the other hazards of war, losing two battleships and a cruiser in the space of a single month. But it never relaxed its grip on the doomed fortress. Finally, in August 1904, the Russian squadron made a dash for liberty. A fierce engagement followed, in which Togo's flagship, the *Mikasa*, was heavily damaged; but the Russians were beaten and dispersed, some of their ships seeking refuge in neutral harbours and others returning to Port Arthur, whence they never again emerged. Four days after this decisive battle the Vladivostok cruiser squadron, which had previously made several raids on Japanese shipping, was brought to action by Admiral Kamimura and defeated with the loss of the *Rurik*. The two surviving ships, *Rossia* and *Gromoboi*, returned to Vladivostok so heavily damaged that they took no further part in the war. In less than seven months, therefore, Japan had secured the local command of the sea, and was able to continue her military operations with perfect freedom.

Russia made a final attempt to retrieve the situation by sending her Baltic Fleet to the Far East, but the effort was hopeless from the beginning. Towards the close of its long voyage from Europe this ill-starred fleet was intercepted by Togo in the

Straits of Tsushima and utterly beaten in an engagement that ranks as the most decisive naval action in modern history. With the exception of a few ships that escaped to friendly or neutral waters, every vessel in the Russian Fleet was either sunk or captured. This overwhelming success was gained at negligible loss to the victors. No Japanese vessel was sunk, and the casualties in Togo's fleet were astonishingly light. Among the material factors which contributed to his success were the high explosive projectiles used in the heavier Japanese guns. A vivid account of the havoc they caused on board the Russian ships was given by survivors. The Japanese shooting was very effective and the percentage of hits remarkably high in view of the fact that many of the guns were badly eroded through continual use and could not be replaced. In this battle, as indeed throughout the campaign, the Japanese Fleet had been manœuvred and fought with the utmost skill and gallantry. Viewed as a whole the strategy of its leaders had been far superior to that which had marked their conduct of the naval war with China ten years beforehand. In the judgment of Mahan, the Japanese naval command had displayed that accuracy of diagnosis, concentration of purpose, and steadiness of conduct which were so conspicuously wanting in their opponents.

Owing to the many ships which had been captured from the Russians, the end of the war found the Japanese Navy considerably stronger than it had been at the beginning. Including the ex-Russian vessels salved at Port Arthur and Chemulpho, it had been augmented by five battleships, aggregating 62,614 tons; three coast defence ships, of 18,070

tons ; one armoured cruiser, of 7800 tons ; and three protected cruisers, of 16,130 tons—representing a grand total of 104,614 tons. In 1906 the Navy was further reinforced by the delivery of two new battleships, the *Kashima* and *Katori*, which had been laid down in England early in 1904. But unfortunately for Japan, the value of this great accretion of tonnage was heavily discounted by the advent, in 1906, of the *Dreadnought*, which at once reduced existing types of armoured ships to relative obsolescence. The appearance of the all-big-gun ship compelled Japan, in common with every other naval State, to set about the reconstruction of her battle fleet. It is probable, however, that she would in any case have proceeded to build ships of considerably greater power than those with which she had won the war. The experience gained during the campaign, especially in the crowning victory of Tsushima, had demonstrated the immense superiority of the heavy gun over weapons of smaller calibre. This was, in fact, the outstanding tactical lesson of the war, and it had already been embodied in the design of two battleships, the *Aki* and *Satsuma*, laid down in Japan early in 1905—that is, many months before the *Dreadnought* was commenced in England. Each of these two ships mounted four 12-in. and twelve 10-in. guns, a most formidable armament for that period. But since the Japanese did not unnecessarily advertise the experience they had derived, foreign experts drew contradictory conclusions from the battle of Tsushima and other naval engagements of the war. Many believed that the quick-firing gun had proved its supremacy, and consequently advocated the building of ships to be armed with a great number of these guns. It was reported at the

time that Japan had freely communicated her war data to the British Admiralty, but this has never been confirmed. It is certain, however, that British naval opinion agreed with that of Japan in attributing the defeat of the Russians, so far as material was concerned, mainly to the big gun.

Notwithstanding its desire to increase the fighting power of the services by land and sea, the Japanese Government failed to take prompt advantage of the wave of enthusiasm that swept over the country after the defeat of Russia. There was certainly a good deal of grumbling by the populace at what they considered to be the unsatisfactory terms of peace, but at the same time they showed no immediate tendency to cavil at the cost of the weapons which had made victory possible. It was at this period that the project for creating a new fleet of eight battleships and eight armoured cruisers, all of the most formidable type, was first mooted. But before it could be carried into effect the country was plunged into grave financial difficulties, and a reaction set in against the proposed heavy outlay on armaments. So serious was the opposition manifested in the Diet that practically every new programme submitted on behalf of the Army or Navy led to a Cabinet crisis. As might have been expected in these circumstances, the Government soon found it expedient to impose a check on the demands of the fighting services, with the result that the ambitious plans which had been framed immediately after the war underwent drastic modification. During the next three years every proposal for the building of armoured ships was rejected, and it was not until 1909 that the Diet could be prevailed upon to sanction the building of

the first two genuine Dreadnoughts for the Imperial Navy. In 1910 funds were voted for the first battle-cruiser, and in the following year the unusually generous programme of four capital ships was approved, after the Minister of Marine had presented to the Diet a confidential report on the general naval situation, laying special emphasis on the rapidly shrinking sea-power of Japan. No armoured construction was authorised in 1912, and only one battleship in 1913. The normal programme for 1914, which provided for two battleships, was extended, soon after the declaration of war against Germany, to include twenty destroyers, at a cost of £1,950,000. During the session of 1915-16 the Diet approved a Government Bill fixing the strength of the main fleet at eight battleships and four battle-cruisers, and voted £4,500,000 for new construction. In the session of 1918-19 it passed an amendment increasing the number of battle-cruisers to six. Finally, in 1920, came the so-called 'eight-eight' programme, which makes provision for the laying down of two armoured ships per year for the next eight years, in addition to a very large number of light-cruisers, destroyers, and submarines. Owing to the intricate budget methods peculiar to Japan and the innumerable revisions and amendments to which every naval programme of recent years has been subjected, it is a matter of great difficulty to determine the exact sum of money spent each year on the Imperial Navy; but the following table gives, in round numbers, the yearly appropriations made since the war with Russia:

1906	£6,000,000	1909	£7,000,000
1907	7,000,000	1910	7,500,000
1908	8,000,000	1911	8,450,000

1912	£9,300,000	1917	£17,000,000
1913	9,600,000	1918	25,000,000
1914	14,000,000	1919	25,000,000
1915	12,600,000	1920	32,000,000
1916	14,600,000		

The estimates for 1920 appear, however, to have been considerably increased, and are said to have reached a gross total of £50,000,000. Those for 1921 involve an expenditure variously put at £50,000,000 and £75,000,000. The new construction authorised from 1910, inclusive, to the present date is as follows:

Battleships	12
Battle-cruisers	12
Light-cruisers	25
Destroyers	102
Submarines	113

The above figures are based upon Japanese information, but according to comparative tables published in 1919 by the United States Office of Naval Intelligence, Japan was then planning to build 34 new light-cruisers, 77 destroyers, and 80 submarines. It was not stated, however, how these totals were arrived at, and they appear to be exaggerated. Nevertheless, it is by no means certain that the high-water mark of Japanese naval expansion has been reached. In this connection the following extracts from a statement made by the chief of the office of Naval Intelligence, to the Committee of Naval Affairs in the United States Congress on the 20th February 1920, are instructive:—'The Japanese Navy Department recently submitted to the Cabinet the following building programme: 4 battle-cruisers, 12

cruisers (from 5000 to 6000 tons), 24 light-cruisers (5000 tons), 32 large destroyers (1300 tons), 32 medium destroyers (850 tons), 34 large submarines (1300 tons), 40 medium submarines (800 tons), and 10 special service ships, making a total of 188 vessels. This estimate was submitted on the 15th November 1919. The programme as finally approved by the Budget Committee, at least as to the amount of money, was as follows: 4 battleships, 4 battle-cruisers, 12 cruisers (5000 to 6000 tons), 32 destroyers (850 and 1300 tons), 28 submarines (800 and 1300 tons), 18 special service vessels (10,000 tons), and 5 gunboats.' According to this statement, 4 battleships were added to the original programme, while, on the other hand, 24 light-cruisers, 32 destroyers, and 46 submarines were either deleted or postponed to a subsequent date.

A summary of Japanese naval construction down to the end of September 1920, given in the British House of Commons, on the 1st December 1920, by the Parliamentary Secretary of the Admiralty, showed that Japan had on hand the balance of an old programme due for completion in 1923-24, and a new programme due for completion in 1927-28. The residue of the old programme was:—

Battleships . . .	4
Battle-cruisers . .	4
Light-cruisers . .	11
Destroyers . . .	41

The new programme provided for:

Battleships . . .	4
Battle-cruisers . .	4
Light-cruisers . .	12
Destroyers . . .	30 to 40

Several Japanese newspapers, including the Tokyo *Yomiuri*, declared that the Navy Department would not consent to modify its demand for light-cruisers, destroyers, etc., until the Cabinet had given an explicit assurance that the ships temporarily disallowed would be reinstated 'as soon as financial circumstances permit.' The *Yomiuri* and other periodicals [1] state that the authorities are anxious to put into execution, at the earliest possible date, the 'three 8—8' scheme, having regard to the enormous expansion of Japanese trade and of her growing interests in the South Seas. This project would necessitate the construction and maintenance of 16 battleships, 8 battle-cruisers, 8 cruisers of large dimensions, 24 cruisers of medium size, 52 large destroyers, 24 large and 40 medium submarines, and 12 special service vessels. The adoption of such a programme would involve the construction each year of three to four capital ships, two light-cruisers, and a considerable number of destroyers and submarines. The *Yomiuri* adds that the cost of the eight capital ships, twelve cruisers, and the smaller craft authorised in 1920 will be £68,000,000. Another Tokyo journal, the *Yorodzu*, rebukes the United States for having compelled Japan to shoulder this crushing burden of naval armaments. It recalls the policy of Russia, some twenty years ago, when the Tsar's Government, having advocated an international peace conference, at once began to augment its fighting forces; and hints that America may be following the Russian example. 'As the United States is devoting the gigantic sum of £110,000,000

[1] Including the *Japan Year Book*, 1919-20.

to enlarging her Pacific Squadron, Japan is compelled, despite her limited financial resources, to spend £86,000,000 on naval aggrandisement. If America were not augmenting her naval armaments, Japan would be at liberty to economise in the same direction. It is, however, because of the American menace that we are forced to enhance our naval power at the cost of heavy taxation, under which the people are groaning.' The same journal compares President Wilson to the German ex-Kaiser, 'who was generally regarded as the incarnation of militarism, and yet spoke of pacificism for nearly thirty years after his accession, thus concealing his real ambitions. It was much like Taira-no-Kiyomori, who wore a priest's robe over his military armour.'

As the proceedings in the Budget Committees of the Imperial Diet are never published in full, and since the Japanese Press is not permitted to wax unduly loquacious about matters relating to national defence, the outer world is left to draw its own conclusions from the feverish expansion of Japan's naval armaments. That the people are being systematically taught to look upon America as their mortal enemy is evident, but that Japanese statesmen should believe in this bogy of their own creation is scarcely credible. When introducing his new programme in July 1920, the Minister of Marine, Admiral Kato, said that it was not directed against any potential enemy, but was dictated by the country's insular position, 'although the possibility of the despatch of foreign forces to the Orient had not been disregarded.' The writer is indebted to a correspondent in Japan for the following account of the proceedings in the Budget Committee of the

Diet when last year's naval programme was under discussion:

'*A Member*: "For how long a period will the requirements of the Navy be covered by this Bill?"

'*Admiralty reply*: "No definite answer can be returned to that question. The programme now before you is the minimum consistent with our needs to the end of 1924. It is not considered wholly adequate by the Imperial Navy Department, especially as regards the number of cruisers and submarines, these being types to which special importance is attached. Developments in the naval policy of foreign States cannot be ignored by us.

'*A Member*: "Does this programme take cognisance of current naval expenditure in the United States and England?"

'*Admiralty reply*: "Yes; it was not prepared until the extent of current naval expenditure by those two Powers was known to us. Any substantial additions which may be made by either of them would compel us to reconsider our own Budget."

'*A Member*: "Are we, then, building warships against the United States or England, or both?"

'*Admiralty reply*: "No; against neither. The Navy Department deprecates such suggestions. But it is obvious that our own programme must be influenced by what is being done abroad. I am asked in what relation our Navy will stand to that of the United States when all the new construction authorised here and in America is afloat. The answer is, approximately, as 1 to 2; that is to say, we shall be about half as strong as the United States in capital ships. That ratio would be disturbing, and perhaps inadmissible, but for certain corollary factors, such as our superiority in cruisers, our proportionately larger *personnel*, and our more advantageous strategical position."

'*A Member*: "The political outlook must indeed be grave if the Navy Department feels warranted in demanding £68,000,000 for new warships at a time of such pronounced

economic stress. The Committee would welcome a more detailed explanation of the Department's reasons for this heavy demand."

'*Admiralty reply*: "The programme is dictated by requirements of strategy. It was not drawn up without earnest consideration or without due allowance being made for the country's financial situation. Every nation must, however, be prepared to make sacrifices if it desires to be safe from foreign aggression."

'Various members then spoke. One pointed out that the alliance with England had led to no visible reduction in naval expenditure, but rather the contrary. "Are we deriving any material benefit from this pact with England, and, if so, of what nature?" Another expatiated on the provocative character of American policy in the Far East. "America appears to think she is divinely appointed to rule the world with a big stick. What is the purpose of her colossal Navy if it is not to make her power supreme in every part of the Pacific? American statesmen profess an undying devotion to peace, and meanwhile they are building warships on a scale unparalleled in history. They preach the doctrine of racial equality and equal opportunity and yet refuse to admit educated Japanese immigrants to American citizenship. They disclaim all intention of meddling with foreign politics, and at the same time continue to bombard us with arrogant notes about our policy in Manchuria, Siberia, and Saghalien. In these circumstances America has only herself to blame if sober Japanese are beginning to suspect her of designs upon their country and its most cherished interests." Another member inquired whether the Navy Department was satisfied of its ability to protect Japanese trade in time of war.

'*Admiralty reply*: "The problem of guarding sea-borne trade has naturally received close attention. Our shipping has grown so considerably of late years that we have become very vulnerable in this respect. Detailed information of the plans for trade protection in time of war cannot be divulged, but it may be said that while the safety of our

shipping on long-distance routes could not be fully guaranteed without a very large increase in the number of cruisers, the measures taken to safeguard our communications with China, Korea, and the Western Pacific ports in general are considered to be adequate." '

Analogies have often been drawn between the military policy of Germany during the thirty years preceding the world-war and that of Japan in more recent times. Outwardly, at least, the resemblance is very marked, but whether there is an equal similarity of motive and aim is a question that time alone can answer. In Japan, as in Germany, the Navy came into existence as an offshoot of the Army, and was developed for a time as a mere branch of the land forces. But whereas the German Navy was never completely emancipated from its military leading strings, the Japanese Navy earned a title to equality with the sister service by its brilliant achievements in war. The subordinate position of the Navy during the war with China was shown by the fact that the Chief of the General Staff, a general officer of the Army, controlled the operations of both services. This arrangement persisted until the outbreak of war with Russia, ten years later, when the heads of the Army and Navy were for the first time placed on the same footing of executive authority at Imperial headquarters. Since that date the Navy may be said to have become the senior service. Not only has it received from the Diet treatment of a far more generous character than that accorded to the Army, but naval officers have gradually gained a dominant voice in the national councils, and of late years have exercised a decisive influence on the shaping of national policies. This fact should not

be overlooked when considering the scope and possible objectives of Japanese naval expansion. It is customary in the Western world to regard sea-power as essentially defensive; indeed, the thesis has been advanced that navies, in contrast to land armies, can never be made the instruments of imperialistic ambition. It is, however, doubtful whether this theory can be maintained. The late German Navy was defensive only in the sense that it was intended to awe England into neutrality while Germany worked her will on the Continent; and that it would eventually have been used for purposes of aggression is not open to doubt. Japan may urge that her insular position and consequent dependence on the freedom of sea communications renders a powerful navy indispensable to her safety and welfare; but since it is unquestionably the case that the growth of her naval power has coincided with the prosecution of vast schemes of territorial penetration in China, foreigners may be forgiven if they have come to look upon the Navy of Japan as the shield behind which she hopes to make her influence all-powerful in the Far East. Even in Japan itself there is no longer any attempt to dissociate the Navy from the Government's cherished scheme of gaining complete political and economic control over China. The *Japan Year Book* admits that 'the object of expanding national armaments is primarily to guard our interests in Manchuria and China.' In effect, therefore, Japan wishes to make herself so strong that no foreign Power will venture to oppose her in China, and the ultimate aim of her naval policy is thus seen to be offensive rather than defensive.

CHAPTER VI

THE JAPANESE NAVY: ADMINISTRATION, DOCK-YARDS, AND SHIPBUILDING RESOURCES

JAPANESE naval administration was formerly modelled on the British system, but in recent years it has been completely reorganised, and now bears a nearer resemblance to the system that obtained in Germany before the war. In place of a Board of Admiralty, clothed with general executive authority, there is a Naval Staff and a Navy Department, each independent of the other. The Staff is responsible for plans and operations, while the Navy Department attends to all matters of administration and supply. The Naval Staff, now presided over by Admiral H. Shimamura, consists of an Operations Division, a Mobilisation Division, and an Intelligence Division. The Navy Department, at the head of which stands the Minister of Marine, Admiral T. Kato, is subdivided into eight bureaus, as follows: (1) Bureau of Military Affairs, (2) Bureau of *Personnel*, (3) Bureau of Engineering, (4) Legal Bureau, (5) Bureau of Accounts and Supplies, (6) Bureau of Munitions, (7) Bureau of Medical Affairs, (8) Ministerial Secretary's Bureau. The Departments of Material, Naval Education, and Naval Works are also under the control of the Minister of Marine, whose authority extends, further, to various boards, departments, and instructional establishments, viz. the Technical Board, the Education Board, the Hydrographical

Department, the Department of Contracts, the Naval Staff College, the Cadets' School, the Engineering School, the Medical School, the Gunnery School, the Torpedo School, the Accountants' School, and the Naval Arsenal.

The coast of Japan is divided into four naval districts, or 'Admiralties,' viz. Yokosuka, Kure, Sasebo, and Maidzuru, each administered by a commander-in-chief, who is a flag officer of high rank, assisted by a numerous staff. The four naval stations, distinct from the 'Admiralties,' are Port Arthur, Mekon, Ominato, and Chinhai.

Questions pertaining to general policy and to promotion in the senior ranks of the service are dealt with by the Admiral's Council, a body that wields great influence. In 1919 it consisted of fourteen members: Vice-Admiral H. Takarabe, Admiral Prince Higashi-Fushimi, Vice-Admiral K. Suzuki, Rear-Admiral Y. Mori, Admiral H. Shimamura, Admiral K. Murakami, Rear-Admiral K. Ide, Vice-Admiral Tochinai, Vice-Admiral J. Matsumura, Vice-Admiral Ito, Vice-Admiral Prince Hiroyasu, Vice-Admiral K. Sekino, Vice-Admiral J. Yamaya, and Vice-Admiral H. Tadokoro. While the precise functions of this Council are somewhat obscure, they appear to resemble those performed by the General Board of the United States Navy. It is known, for instance, that the Council takes a leading part in framing the naval programme each year, and in deciding important technical questions, such as the dimensions, armament, and other characteristics of new ships.

In the ultimate resort, matters of high policy concerning both combatant services are adjudged by the Marshals' and Admirals' Office, in time of

peace the supreme advisory body to the Emperor on national defence. This institution, which dates from 1898, has never included more than fourteen members, and by the year 1920 death had reduced their number to nine, viz. Marshal Prince Yamagata, Admiral of the Fleet Count Togo, Marshal Viscount Hasegawa, Marshal Count Oku, Marshal H.I.H. Prince Fushimi, Admiral of the Fleet Viscount Inouye, Marshal Viscount Kawamura, Marshal Count Terauchi, and Admiral of the Fleet Baron Ijuin.

The Supreme Council of War was created in December 1903, a few weeks before the outbreak of hostilities with Russia. It meets at intervals to discuss important problems of national defence and strategy. Members of the Marshals' and Admirals' Office, the Ministers of War and Marine, the Chiefs of the General Staff and Naval Staff are *ex officio* members of the Council, which includes eight specially appointed members: Admiral Baron Kataoka, Admiral Baron Dewa, Admiral Fujii, Admiral Baron Yashiro, General H.I.H. Prince Kan-in, General Ichinohe, General Oseko, and General Iguchi.

The oldest and most important dockyard in Japan is that at Yokosuka.[1] Established in 1864 under the Tokugawa Regency, it passed in 1868 to the Imperial Government, by whom it was transferred to the Ministry of Public Works, whence, in 1872, it was handed over to the Imperial Navy. Of the six building slips in the yard, one can take a battle-cruiser, two are large enough for Dreadnought battleships, and the remainder are avail-

[1] Certain of the following details of Yokosuka and Kure dockyards are from papers read by Rear-Admiral Constructor Motoki Kondo, I.J.N., in London (1911) and Kobe (1914).

able for gunboats, torpedo-craft, or submarines. The largest berths are provided with gantry and crane equipment for dealing with the heaviest weights. There are five graving docks, including two for vessels of the Dreadnought type. The yard, when first laid out, covered an area of eighteen acres, and employed less than 1000 men. At the present time it covers more than 120 acres and has 11,000 employés. The engineering department consists of a foundry, smithy, machine, boiler, and plumbers' shops, and is furnished with all modern plant necessary to the manufacture of machinery and boilers for the largest warships. The first large engineering contract undertaken at Yokosuka was the manufacture of the whole of the propelling machinery for the battleship *Satsuma*, including all castings, forgings, and boilers. A great deal of repair work is executed at this yard, and for several years after the Russo-Japanese War it was working at high pressure on extensive refits and alterations to captured ships, which had to be carried out over and above new construction and normal repairs to Japanese vessels. From 1905 to 1908 inclusive, the staff at Yokosuka averaged 17,000. This yard built the *Hi-yei*, the first battle-cruiser constructed in Japan, and the Dreadnought battleships *Kawachi* and *Yamashiro*. It is at present fitting out the battleship *Mutsu*, of 33,800 tons, which it launched on May 31, 1920, and is building the 43,500-ton battle-cruiser *Amagi*, laid down in December 1920.

Kure, the second oldest naval dockyard in Japan, is situated on the Inland Sea, near Hiroshima. It was founded in 1889, but very little work was done until 1894, when the war with China rapidly increased the importance of the new yard. Since

then it has been so largely developed that it now rivals Yokosuka in area and shipbuilding facilities. There are seven slips, one of which can take vessels up to 900 ft. in length, and a second slip is being lengthened to 800 or 850 ft. The graving docks are four in number, two being large enough to receive ships of the Dreadnought type. To Kure belongs the honour of having turned out the first armoured vessel built in Japan. This was the *Tsukuba*, an armoured cruiser of 13,750 tons, which was laid down in January 1905, launched on the 26th November in the same year, and completed thirteen months later. The construction of this vessel was a very creditable feat in the circumstances described by Dr. Terano, an eminent Japanese naval architect. He writes: 'The successful building of the *Tsukuba* may be said to supply another significant illustration of how far human power, when confronted by an emergency, may develop its ingenuity. When the decision was taken to build this vessel at Kure, constructors and workmen alike were in dismay, for the largest ship they had built up to then was a cruiser of *Tsushima* type, of rather more than 3000 tons displacement, which had been completed only two years before. Moreover, the mechanical equipment of the yard was quite inadequate for undertaking this important work. However, both the officials and the workmen were sustained by the heroic spirit awakened in them by their country's need, and thanks to this resolute spirit they were able to overcome the innumerable difficulties that cropped up at every stage of the work. And thus, with no model to follow, they eventually completed the warship. Judged in the light of later experience

and by the mechanical standards of the present day, this first battleship-cruiser in the world may not be quite satisfactory in regard to riveting and structural features, but, despite much adverse criticism, she has proved efficient in service, and has also made a voyage round the world.' The *Tsukuba* was unfortunately destroyed in January 1917, by an internal explosion. Further achievements by the Kure dockyard were the launching of the *Ibuki*, an armoured cruiser of 14,600 tons, in exactly six months from the date of laying the keel; and the building and completion of the destroyer *Katsura*, a boat of nearly 700 tons, within five and a half months. Previous to 1915 all the submarines of the Imperial Navy, with very few exceptions, were built at Kure. Submarine No. 11, a small boat constructed at Kure to British plans, distinguished herself in the manœuvres of 1913 by torpedoing two battleships in succession, and then remaining submerged for fifteen hours to avoid detection. Since 1916 a large portion of the dockyard has been reserved for the building of submarines. There are four covered slipways, each long enough to permit the building of two large submarines in tandem, and near at hand are shops for the construction of heavy-oil motors. Among the important warships built and building at Kure are: the *Aki*, 19,800 tons; *Settsu*, 21,420 tons; *Fuso*, 30,600 tons; *Nagato*, 33,800 tons; and the *Akagi*, 43,500 tons; the last-named battle-cruiser having been commenced in 1920. The engineering and boiler shops, which are somewhat larger than those at Yokosuka, are now capable of constructing turbine machinery up to 150,000 shaft horse-power.

Since 1912 the State factories attached to Kure

dockyard have been turning out a large proportion of the structural steel, armour plate, and ordnance required by the Imperial Navy. Armour up to a thickness of 15 in., tempered on the Krupp process, and naval guns of 16-in. 45 calibre model have been manufactured here. The annual capacity of the Kure gun factory in 1919 was returned as thirty heavy guns, 12-in. to 14-in., complete with mountings. In that year special plant was laid down for the production of still heavier ordnance, and 16-in. guns and mountings are now in process of manufacture for the new capital ships. Speaking before the Diet in February 1914, the Minister of Marine stated that armour plate produced at Kure had exhibited a higher degree of resistance to penetration than specimen plates obtained from the leading steel foundries of the world, including the Krupp works at Essen. It may be interpolated here that Japan, after great exertions, has at last succeeded in making herself practically independent of foreign supplies, so far as naval material is concerned. Finding it impossible during the Great War to obtain such material either from Great Britain or the United States, she proceeded to enlarge her own sources of production, with so much success that in 1920 the Minister of Marine, Admiral Kato, was able to announce that all the warships then under construction would be built and equipped with none but Japanese labour and Japanese material.[1] The Imperial Ironworks at Yawata, Kyushu, is the principal steel factory in

[1] This statement may be contrasted with that of Baron Saito, a former Minister of Marine, in February 1912, when he admitted that 30 per cent. of the material in the battle-cruiser *Haruna* had been made abroad and merely fitted together in Japan.

Japan. By the year 1917 this establishment was producing annually some 200,000 tons of armour plate, forgings, rails, etc., and subsequent extensions, made at a cost of £400,000, have since increased its output of armour alone to 60,000 tons a year, and its monthly production of ships' plates to 100,000 tons. Yawata and Kure supply between them four-fifths of the shipbuilding steel used in the country. Another important source of steel supply are the works at Muroran, Hokkaido, which were founded in 1908 as a joint enterprise by the Hokkaido Colliery and Steamship Co., Messrs. Armstrong, Whitworth and Co., and Messrs. Vickers. This establishment manufactures naval ordnance, steel plate, castings, and forgings of every description.

Whether Japan is really so self-supporting in respect of steel as official statements indicate, may be doubted. It is certain, at all events, that two of the leading firms in England received during 1920 inquiries from the Japanese Government for armour plate, and in October of that year a contract, said to be for 7,500 tons, was placed with Vickers, Ltd. Another British firm had received earlier in the year a large order for armour-piercing projectiles for the Japanese Navy. The most probable explanation is that, while the national industry is now able to cope with all reasonable requirements, it cannot meet the abnormal demand for shipbuilding steel and armour plate which has arisen as a consequence of the Government's huge programme of naval expansion. A discovery announced from Tokyo in October 1920 may have an important bearing on the future domestic supply of steel. Iron ore is scarce in Japan, but it has long been common knowledge that the islands are volcanic in nature

and rich in deposits of iron oxide, which has always been regarded as too refractory to yield to the ordinary methods of smelting. In recent years, however, the Japanese Government has been carrying out exhaustive experiments in this connection, and a satisfactory method of smelting iron from these volcanic ores has at length been discovered. It is significant that the process is being guarded as a military secret, and will be operated exclusively for the benefit of the Navy and Army ; but according to the Japanese newspapers its further development may give the country as much steel as is needed for every purpose.[1]

The dockyard at Sasebo dates from 1890, and, like that at Kure, owed its growth mainly to the Chinese War. Situated on the island of Kyushu, not very far from Nagasaki, it was primarily intended for repair work ; but in 1906 it began the construction of a light-cruiser, and since then has built several vessels of this and smaller types. There are five building slips, including one of 550 ft. ; six docks, of which two will accommodate Dreadnought battleships ; and well-equipped machinery, boiler, and repair shops. This yard now specialises in the construction of light-cruisers and submarines. In the course of the Parliamentary debate on the

[1] A statement made by the Japanese War Office on October 18, 1920, said, with regard to the process : ' Iron sand is so general throughout the entire length and breadth of the Empire that it has long been plain that if some method were discovered of smelting the iron from it, Japan would never suffer from want of steel. On the strength of the above, the necessary investigations were started as early as September 1919, by a special committee, with experimental offices established in the Aomori Prefecture, and with Dr. Kishi as chief engineer. The experiments of a year have now been crowned with tolerable success, and the process has been experimented with on a practical scale at the Penchihu works under the control of the Okura firm with very satisfactory results.'

1920-28 naval programme it was stated that the authorities were anxious to develop Sasebo on a very large scale in the next few years. Its geographical position gives it great strategical value, and the plans of the Navy Department include the building of an additional Dreadnought dock, a 50,000-ton floating dock, and the installation of giant cranes, with other plant for the rapid execution of every class of repair work. Shops for the manufacture and repair of submarine motors were begun here in the autumn of 1920.

The Maidzuru Dockyard, on the Gulf of Wakasa, is the most recent of all the first-class naval establishments in Japan, having been founded as late as 1901. It is the only dockyard in the Sea of Japan, and gains in importance by its proximity to Osaka and the excellence of its railway communications with other great industrial centres. It is well furnished with plant for repairs to ships and machinery, and in the last few years its facilities for new construction have been much enlarged. Up to the present it has built only destroyers, minelayers, and other small craft, but in the near future it will construct light-cruisers and submarines. There are three large docks, including one for Dreadnoughts, and building slips up to 600 ft. in length.

There are smaller dockyards at the auxiliary naval bases of Ominato, on the north-east coast; Takeshiki[1] in the Island of Tsushima; at Tokuyama Bay, 160 miles north-east of Nagasaki; Ryojun (Port Arthur); Dairen (Dalny); Chinkai (Korea), and Bako, one of the islands of the Pescadores. At Tokuyama Bay a large harbour, to shelter Dreadnoughts, is

[1] Takeshiki dockyard is said to have been practically destroyed by fire, and since abandoned.

under construction, together with repair shops and naval magazines. At Ominato and Bako there are floating docks for destroyers and submarines.

The Imperial Navy has, of course, benefited by the phenomenal growth of the shipbuilding industry in Japan. The sudden demand for tonnage during the war led to the enlargement of existing yards and the creation of scores of new establishments, though many of the latter enjoyed but a brief existence and have since disappeared. At a conservative estimate, however, Japanese shipbuilding resources are already twice as great as they were in 1914, and with the completion of the various projects now in hand a further fifty per cent. increase is anticipated. Until lately the only private yards in the country capable of turning out the heaviest warships, complete with their machinery, were those of the Mitsu Bishi Company, at Nagasaki and Kobe, and the Kawasaki Dockyard Company's yards at Kobe and Yoshiura. By 1922, however, five additional concerns, viz. the Suzuki Company, the Asano Company, the Uraga Dock Company, the Mitsui Company, and the Yokohama Dock Company will, it is anticipated, be in a position to execute orders for warships of the largest dimensions ; while at least five other yards can undertake the building of light-cruisers, torpedo-craft, and submarines.

The Mitsu Bishi Company is easily the leading shipbuilding firm in Japan. Its yards at Nagasaki cover an area of 130 acres, with a water frontage of two miles. Including those not yet finished there are eight building berths, six of which are above 500 ft. in length ; and three large graving docks. The engineering plant is thoroughly up to date, and the whole yard is organised on modern

principles. A secondary yard at Kobe, owned by the same firm, is specially equipped for heavy repair work, but can also build vessels up to 600 ft. in length. The Kobe establishment also manufactures internal-combustion engines for submarines and other vessels. Some of the finest Japanese men-of-war have been built by this firm, including the battle-cruiser *Kirishima* and the battleship *Hiuga*. It is now at work upon the battleship *Tosa*, of 40,600 tons, and the immense battle-cruiser *Takao*, of 43,500 tons. The Mitsu Bishi yards are noted for rapid construction, their prowess in this direction having been illustrated in 1914 by the launching of two destroyers within fourteen weeks from the laying of their keels.

Hardly less important is the Kawasaki Dockyard Company, which operates large yards at Kobe and Yoshiura, with a branch establishment at Dairen (Dalny). The main yard at Kobe, which covers over 130 acres, has one new building slip 900 ft. long, four slips above 500 ft., and excellent dock accommodation. There are shops for the manufacture of boilers, reciprocating and turbine machinery up to the maximum power, and for the production of Diesel engines for driving submarines, vessels of this type being built at Yoshiura, which has specialised in such work since 1917. The Kawasaki people claim to have broken all records for the quick construction of mercantile vessels. During the period of intensive shipbuilding brought about by the depredations of German submarines, many new records for rapid construction were made in the United States, and a firm at Ecorse, on the Detroit River, announced that it had 'licked creation' by delivering the steamship *Crawl Keys*, of 2300 tons

gross, ready for sea twenty-nine days after the keel had been laid. This achievement, creditable as it was, has been surpassed by the Kawasaki yard at Kobe in the case of the steamer *Raifuku Maru*, of 5800 tons gross. The keel of that vessel was laid on the 7th October 1918; she was launched on the 30th October, and her official trials were successfully completed on the 5th November. In her case, therefore, the building period had also covered twenty-nine days, but she was larger than the American vessel by 3500 tons, a difference which made the record much more noteworthy. The same yard built and completed the 31,300-ton battleship *Ise* in thirty-one months. It is now at work on two very large men-of-war, the battleship *Kaga*, of 40,600 tons, begun in July 1920, and the battle-cruiser *Atago*, of 43,500 tons, laid down later in the year.

The Osaka Iron Works Company, which was founded in 1880 by an Englishman, Mr. E. H. Hunter, owns three yards in the vicinity of Osaka, respectively devoted to shipbuilding, marine engineering, and repairs, and possessing a total of fourteen building berths, of which the six largest are more than 560 ft. long, and eight graving docks. The shipbuilding yard has an area of nearly twenty acres. Although this firm had shown great enterprise by building the first steel vessel and the first set of triple-expansion engines ever produced in Japan, it did not begin to prosper until a few years ago, when the completion of the Osaka harbour development scheme gave it a deep-water frontage and improved its communications. Since then it has forged ahead rapidly, and of late years has been building more mercantile tonnage per year than

any other yard in the country. The first naval contracts were undertaken in 1894, when several torpedo-boats were built. Later on this yard turned out some very successful destroyers, and will probably build a number of torpedo-craft authorised by the new programme. It is, however, quite capable of executing much heavier naval work, having built merchant steamers up to 12,000 tons gross, and its annual capacity for tonnage of every description is at least 225,000 tons. The Osaka firm also operates repair yards at Moji and Keelung, in Formosa.

The Yokohama Dockyard, which before the war confined itself to repair work, has since gone in for shipbuilding on a large scale. It owns one slip for vessels up to 600 ft., and two smaller ones, together with three graving docks.

The Ishikawajima Dockyard, at Tokyo, is another concern which at one time specialised in repairs, but has since found it more profitable to take up shipbuilding. It has built destroyers for the Navy and cargo steamers as large as 6000 tons. It is reported to have secured the contract for two new submarines, a class of work in which it has not hitherto engaged.

The Uraga Dockyard Company, at Uraga, formerly a very modest establishment, is now controlled by Mr. Yamashita, the shipping magnate, who has greatly enlarged its area and resources. There are six building berths, occupied until recently by merchant vessels of 5000 to 12,000 tons; one large dock, and shops for the manufacture of marine engines, turbines, and boilers. Several destroyers have been delivered from this yard, which is now building a new light-cruiser.

The Asano Shipbuilding Company, of Tsurumi, near Tokyo, is the largest of the many new yards that came into existence during the war period. Founded in 1917 by Mr. Soichiro Asano, a wealthy manufacturer, it has already become an important and thriving concern, and when completed will rival the great Kawasaki and Mitsu Bishi yards in area and capacity of plant. There are ten slips built or in course of completion, all above 550 ft. in length, and two of the new ones will be 800 ft. long. Mr. Asano is said to have secured orders for one light-cruiser and several torpedo-craft belonging to the latest programme. He is a firm believer in the internal-combustion engine, and contemplates the erection of the largest marine motor factory in Japan.

A still more youthful establishment is the Mitsui yard at Uno Bay, near Okayama. Although the first sod was cut only in April 1918, a large town has already sprung up, populated for the most part by employés of the firm. The yard will ultimately have eight or ten building slips, several of sufficient dimensions to take ships up to 900 ft. in length; engine and boiler shops, and a factory for the production of ships' fittings.

The Suzuki Company is a Kobe syndicate that purchased in 1916 the Harima and Toda shipyards, which it is energetically developing. At the former yard five large slipways have been put in hand, together with shops for the manufacture of turbine machinery, boilers, and internal-combustion engines.

Other important shipbuilding establishments are: the Fujinagata Co., of Osaka, which builds destroyers; the Asahi yard at Yokohama, and the Uchida yard at Kobe, both of which have constructed merchant

steamers of 5000 tons, and are now adding to their plant. There are five or six smaller Japanese firms who have launched steamers of 2000 to 3000 tons.

It will be seen from the foregoing survey that while Japanese shipbuilding resources have grown prodigiously in the past few years, the zenith of development has not yet been reached. It is probable, however, that the rate of progress will suffer a check in consequence of the depression in shipping business which set in during 1920. In Japan, as in other countries, this phenomenon has led to the wholesale cancellation of orders for new tonnage and the laying up of many completed ships. This notwithstanding, the far-reaching programme of naval construction on which the Japanese Government has now embarked is likely to keep the leading shipyards busily employed for several years to come. As a matter of fact, it is known that several firms which were on the point of abandoning their plans of extension have since been encouraged to proceed with them by Government promises of large naval contracts. According to a statement by the Minister of Marine, Japan is now in a position to build Dreadnoughts at the rate of two per annum. This, of course, includes their equipment of machinery, armour, guns, etc. There is reason to believe, however, that Admiral Kato's estimate is considerably below the mark. The resources of Japan for naval shipbuilding may be summarised as below :

Dockyards capable of building hulls, machinery, and equipment for every type of warship, including Dreadnoughts and battle-cruisers .	4

Dockyards capable of building hulls and machinery for warships up to and including cruisers	4 (or 5)
Dockyards capable of building destroyers, submarines, minelayers, and smaller craft . .	10

The resources tabulated above were available at the end of 1920, but two or three years hence they will have been greatly enlarged, and by that time the position may be as follows:

Dockyards able to build		Dreadnoughts . .	9
Do.	do.	Light-cruisers . .	7
Do.	do.	Destroyers . . .	12
Do.	do.	Submarines . . .	10

The five additional yards that will probably be able to construct Dreadnoughts and battle-cruisers by 1922, if not before, are the Asano, Mitsui, Suzuki, Uraga, and Yokohama establishments. Some of the smaller firms, which are quite capable of constructing destroyers and submarines, are not yet able to manufacture the machinery for these vessels. In regard to oil-engines for submarines, the total Japanese capacity in 1919 was estimated at twelve complete sets per annum, viz., four sets for large ocean-going boats, and eight sets for coastal submarines; but the present total is probably much higher. Motors suitable for propelling submarines are built in the Government shops at Kure, Yokosuka, and Sasebo, and also by five private companies: Mitsu Bishi, Kawasaki, Uraga, Suzuki, and Asano. The question of ordnance and armour supply has been already discussed. According to information which may be accepted as trustworthy, the joint annual output of heavy guns at Kure and Muroran would suffice to arm four Dreadnoughts,

while the production of smaller calibres is sufficient to cover all anticipated requirements. The following additional notes have been communicated to the author from a reliable source:

'Since most of the technical difficulties have now been overcome, Japanese naval expansion will in future be limited only by the amount of money available. Granted the requisite funds, she could build each year four capital ships (battleships or battle-cruisers), four to six light-cruisers, twenty to twenty-five destroyers, and from fifteen to twenty submarines. It goes without saying that she is not likely to adopt a programme of this scope in time of peace, but her ability to do so in case of need is beyond question. There is possibly some significance in the circumstance that every firm which specialises in naval construction, naval armaments, or naval equipment is in receipt of Government subsidy in the form of hard cash or contracts on a remarkably generous cost-plus-profit basis. Were it not for this assistance many of the yards that grew up and flourished during the war would have since gone under. It is quite a fallacy to suppose that Japanese shipbuilders are much behind those of Europe in technical knowledge, or that they are content merely to imitate European designs. On the contrary, they show great boldness and originality in their conceptions, both in naval and mercantile construction. The quality of the workmanship turned out by the best Japanese yards, State-owned and private, is nowadays invariably high. There was undoubtedly some "scamping" during the war, but not to a greater degree than prevailed in other countries, and it is a fact worth noting that nearly all the ships which were built with the utmost rapidity at the height of the tonnage crisis have proved thoroughly efficient in service. This is more than can be said for the majority of the ships produced in the same period by Western yards. Some of the Japanese destroyers which had served on escort and anti-submarine duties in the Mediterranean during the war, and which, on

their return home in 1919, were overhauled—but not re-boilered—subsequently attained speeds in excess of their trial performance, and this in spite of their having steamed many thousands of miles under the particularly exacting conditions of war service. As regards originality of design, it may be pointed out that none of the capital ships, cruisers, or torpedo-craft built within the last few years bear more than a general resemblance to corresponding types in foreign navies. To mention only one example : Japan has evolved her own system of armour and under-water protection for large ships, partly as the result of an exhaustive study and comparison of all existing systems, but mainly in consequence of practical experiments made in 1917, 1918, and 1919, at a cost of at least £600,000. Besides this, Japanese science and industry has been responsible since 1917 for important improvements in many other directions. She has designed for naval use a water-tube boiler which is said to possess a higher steaming efficiency than any foreign type ; she has manufactured heavy naval guns with modifications in rifling, breech mechanism, and mountings which give increased accuracy and rapidity of fire ; she has perfected a method of director control for heavy guns which, according to Admiral Kato, is at least equal to the latest European and American systems, and " will enable every Japanese ship to use its armament with full effect at long range " ; she has developed a type of submarine specially adapted to her own needs, having regard to the peculiar conditions which govern submarine operations in Japanese waters and the Western Pacific generally ; and she has effected substantial improvements in naval explosives, projectiles, torpedoes, and mines.'

CHAPTER VII

THE JAPANESE NAVY: ITS MEN AND SHIPS

As an Island Empire, with a coastline of thousands of miles, exclusive of oversea territories, Japan has always possessed a numerous seafaring population. In no other navy is so large a proportion of the *personnel* drawn from coastal districts. Most of the Japanese bluejackets, therefore, have been familiar with blue water from infancy. Not a few of them hail from Hokkaido, one of the greatest deep-sea fishery centres in the world, and a fair number have served as youths in the Kinkazen, Nagato, and Kurile whaling fleets. To men such as these, who have become inured to the habits, hardships, and perils of sea life at a tender age, enlistment in the Imperial Navy comes as an agreeable change. Nominally, the Japanese Fleet is manned on the dual system of voluntary and compulsory service. In the main, however, it is a voluntary force, and at the present time barely one-quarter of the *personnel* has been conscripted. The naval authorities claim, and to all appearance with truth, that the entire Fleet could be manned by volunteers if they so desired. But it is deemed wiser to obtain a limited number of recruits from the inland provinces, chiefly with a view to fostering an interest in naval and nautical affairs generally among the shore-going sections of the community. But for this consideration the

Navy would long since have been placed on a voluntary basis. Proposals to this effect were introduced some years ago, but were opposed by the Radical and Socialist elements on the ground that such a system would tend to make the Navy more than ever an appanage of the ruling class.

Joining at the age of eighteen to twenty, the volunteer serves for a period of six years, the conscript for three years, with an additional term of seven years in the first line of reserve. Except for a very brief spell of preliminary instruction in shore establishments, the naval recruit spends all his time on shipboard, in accordance with the sound Japanese view that the proper school for the seaman is the sea-going ship. Officers are drawn very largely from the famous Satsuma clan, which has been closely associated with the naval service since its inception, and has provided many of its most distinguished officers. In principle, however, appointment to the Naval College is open to any young man of good family who can negotiate the very severe entrance examination. The cadets, who enter between the ages of 16 and 19, go through a three years' course, followed by a twelve months' voyage in one of the training cruisers. The college is at Edajima, near Kure, and was built in 1908, replacing the original building at Tokyo. At the conclusion of their cruise the cadets are distributed among ships of the active Fleet, and on reaching the rank of Sub-Lieutenant are eligible to specialise in gunnery, torpedo, navigation, or Staff work. Gunnery and torpedo specialists undergo a preliminary course of training for six months, followed by an advanced course lasting twelve months. This latter includes instruction in fire

control for heavy, medium, and light armaments, and qualifies the student for duty as junior fire-control officer or officer of turret. There is a special course at the Gunnery School for warrant and petty officers, whose admittance, however, is conditional on their undertaking to remain in the Navy at least three years longer than the normal period of service. In recent years there has been a tendency to decentralise the control of Fleet gunnery by appointing warrant and petty officers to important and responsible positions in connection with this branch of the service. Finally, there is a short course in gunnery for officers of the Mercantile Marine.

The Japanese Navy has always attached great importance to the torpedo and the mine, and is very proficient in the use of both weapons. Since 1916 the Torpedo School has included a special department for instruction in mining. Warrant, petty, and reserve officers are admitted under the same conditions that prevail in regard to the gunnery course. Navigating specialists attend the School of Navigation for twelve months. The war course for Staff aspirants is two years at the Naval Staff College. There are five different grades of students at this institution. In the first grade are officers, of or above the rank of Lieutenant, who have been through the advanced course in gunnery, torpedo, or navigation, or have served in sea-going ships for a minimum period of two years. Entrance is by competitive examination, and the successful candidates who graduate from the College are eligible for high Staff appointments. Students of the second grade are Sub-Lieutenants or Lieutenants who have distinguished themselves in gunnery, torpedo, or

navigation, and are anxious to qualify as specialist officers in squadrons or fleets. In their case, too, entrance is by competitive examination. The third grade consists of navigating or engineer officers below the rank of Lieutenant-Commander, who receive advanced instruction in their respective branches. The fourth grade is confined to engineer Lieutenants and higher ranks, who are desirous of qualifying for Staff engineering posts in the Fleet, the shore establishments, or at the Navy Department. The fifth and final grade is for senior engineer officers, constructors, and hydrographers, appointments being by selection, not by examination. During the year 1920 the number of students of all grades at the Staff College averaged 190, but this figure is believed to have been largely increased of late. It should be mentioned that engineering cadets enter the Navy separately, being nominated by open competition. They serve three years at the Yokosuka Engineering Academy, and then put in a year at sea. The social standards that govern the entry of cadets for the executive branch do not apply in their case, but, on the other hand, the educational qualifications are distinctly high. This, however, does not bridge the social gulf that exists between the executive and engineer officers, recalling the similar conditions which prevailed in the old German Navy. Other educational establishments of which mention may be made are the Accountants' School, where junior officers of the Paymaster Branch undergo special instruction; and the Mechanics' School, for the training of junior commissioned and non-commissioned officers of the engineering branch. This school specialises in electrical and internal-combustion engineering, and is attended, among

others, by young officers and artificers of the submarine service.

Japanese naval officers are promoted by selection, not by seniority, though a minimum period must have been served in each rank. Cadets, on graduating from the Naval College and completing their course in a naval cruiser, are promoted to Midshipmen. After serving for twelve months on board a warship they are advanced to the rank of Sub-Lieutenant on passing an examination. They are required to serve at least two years in this rank, including time spent at the Staff College or the Gunnery or Torpedo School before being advanced to Lieutenant. The rank of Lieutenant-Commander may be reached in five years, and that of Commander two years later, while a further two years' service makes an officer eligible for promotion to Captain. As will be seen, this system enables officers of conspicuous ability to attain high rank at a comparatively early age; in fact, the average age of flag officers and captains, as shown by the following table, is lower than the average in any other Navy, not excepting the British:

Admirals	61 years of age.
Vice-Admirals	52 do. do.
Rear-Admirals	48½ do. do.
Captains	42 do. do.

Measured by the British and American standards, the rates of pay in the Japanese Navy are low:

Admiral	£750 per annum.
Vice-Admiral	650 do.
Rear-Admiral	560 do.
Captain	460 do.
Commander	360 do.
Lieut.-Commander	260 do.

Lieutenant . . .	£210, £180, or £160 per annum.
Sub-Lieutenant, 1st class	£120 or £102 per annum.
Do. 2nd class	£85 per annum.
Midshipman . . .	£67 do.

Special rates of pay for officers promoted from the Lower Deck:

Lieutenant . . .	£229 or £211 per annum.
Sub-Lieutenant, 1st class	£191 or £178 do.
Do. 2nd class	£160 or £140 do.

Rates of pay for other ranks and ratings:

Warrant Officer . .	£126, £115, £104, or £93 per annum.
Chief Petty Officer .	Yen 1.82, 1.61, 1.37, or 1.14 per day.
Petty Officer, 1st class .	Yen 0.95, or 0.90 per day.
Do. 2nd class .	Yen 0.76 or 0.71 do.
Leading Seaman . .	Yen 0.40 per day.
Ordinary Seaman . .	Yen 0.35 do. [1]

In addition to the above there are various allowances and grants for sea service, messing, etc. Specialists of all ranks and ratings draw higher pay, the rate for the Submarine Service being from 50 to 75 per cent. more than in other branches. Hard-lying money is, or was until recently, paid in the Torpedo flotillas. Although the rates of pay have been increased more than once in the last ten years, they are still very niggardly, even when the lower cost of living in Japan is taken into consideration. Moreover, during and since the war the cost of living has risen enormously, and naval officers without private means now find it extremely difficult to make ends meet. The low scale of pay to officers

[1] 1 yen=2 shillings at the normal rate of exchange.

and men is a factor of some importance in appraising the extent of Japanese naval expenditure. It should be noted, also, that provisions and stores of nearly every description—excepting technical material—cost the Japanese Navy considerably less than foreign navies have to pay for the same commodities. This means that, in the case of Japan, an unusually high proportion of the naval budget is devoted to construction, armaments, and other equipment directly related to material strength and efficiency.

It is to be feared that somewhat fanciful pictures have been drawn of Japanese naval officers and seamen, due to the admiration excited by their prowess in the wars against China and Russia. If contemporary accounts were to be credited, the officers were supermen, inspired by an exalted spirit of patriotism to perform deeds beyond the power of ordinary mortals. These stories, it is hardly necessary to say, should be heavily discounted. The Japanese naval officer is no superman. Gallant and skilful as he has proved himself to be, it may be doubted whether he is more competent in his profession than his *confrères* in the British and American navies. Nor is there quite so much of the ' Bushido ' spirit in the Japanese service as some of the panegyrists would have us believe. Incidents have occurred in the last ten years which suggest that the old idea of Japanese naval officers being, as a class, totally immune from considerations of self-interest, needs to be revised. On the other hand, their patriotism does undoubtedly take the form of a religion, and their devotion to duty is very marked. They are studious to a degree. The late Mr. F. T. Jane, who was personally acquainted with many

officers of the Japanese Navy, recorded some interesting impressions of the type.

'In every navy [he wrote] there are men who work at their profession, and men who do not. The Japanese Navy is no exception to the rule, but the proportion of those who are casual is very small. "Working at their profession" has, however, a very liberal meaning in the Japanese Navy. It means the absolute ignoring of everything else. I once inquired of a Japanese naval officer over here what the Japanese military attaché was called. "I cannot tell you," was the answer, "because I work at my profession." And, judging by his expression, my friend was proud of this little bit of evidence that he wasted no time on extraneous matters. This, too, was in England. His ship was then in an elementary stage at Elswick; he was at Portsmouth on leave. The "working at his profession" in this particular case consisted of spending the day poring over naval books. I generally found him deep in Mahan, with halma-pieces on sheets of paper to work out the tactics. Speaking generally, a Japanese naval officer's idea of a holiday, when in England, appears to be to come to Portsmouth, spend the day going over the dockyard, with a visit to my house to play naval war-game into the small hours as a kind of subsequent dissipation and relaxation! Whatever naval Kriegspiel may or may not be, it takes a Japanese to regard it as a dissipation. . . . The Japanese also retains his old native dignity; European uniform has not abated one jot of that dignity which we have all read about as having been beneath the Kimono. Mostly, though not invariably, they are the descendants of the old fighting-men, the Samurai. In the midst of the new order all the best of the old traditions live. . . . Whatever he may do, in whatever position he may be placed, the Japanese officer never forgets his dignity, and, further, is always a gentleman. I believe this is the first impression that he creates; it is also the last.'[1]

[1] F. T. Jane: *The Imperial Japanese Navy.* 1904.

Some further notes on the same subject, but from a different angle of view, may be of interest. They were written just before the war by a German naval officer who had served at Tokyo:

'Japanese naval education, once primitive and based upon faulty principles, is now very sound, very thorough, very practical. Almost as much importance is attached to the study of naval history as with us. Technically, however, the instruction still leaves something to be desired. The Japanese naval officers are, generally, of a good social class, and every effort is made to keep the standard high, though this is becoming difficult in view of the democratic tendencies now perceptible in Japan. It has been found expedient to admit to the Naval College a limited number of cadets who are not of the best family . . . this in deference to pressure from the Diet and the newspapers, who complain that the service is an aristocratic monopoly. A great majority of the officers, junior as well as senior, are sober, diligent, and enthusiastic for their profession. They are astonishingly self-confident, but whether this readiness to attempt the impossible is a characteristic of the class whence they spring, or whether it is deliberately inculcated by their teachers, I am unable to determine. Their easy victories over China and Russia may have contributed to it. In any case, they firmly believe themselves and their Navy to be invincible. As regards the latter, they claim that it has been developed and organised on thoroughly original lines, and is readier for war than any other navy. In gunnery they follow our (German) methods rather than British, and it is known, of course, that we have supplied a considerable percentage of their gunnery control gear, including range-finders, optical glass, etc. In my judgment Japanese naval gunnery is of a high order. Torpedo work is not so good, but is being rapidly improved. The torpedo officers, who are invariably scientific and confident, complain of the quality of their material. Their torpedoes and other gear are imported

from England, Germany, and America, and they are not satisfied that they obtain the best from these countries, though the German Schwartzkopf enjoys more favour than other types. It has not yet been found possible to manufacture torpedoes in Japan, though many attempts have been made.[1]

'Japanese naval officers are intensely interested in politics. I find them remarkably well versed in current world affairs; but while they hold strong views on questions of foreign policy, they are chary of expressing them to foreigners. Germany is much admired by them, particularly on account of her martial traditions and the thoroughness of her educational system. But they are not friendly to our Fleet, which they regard as a potential menace. This view has doubtless been encouraged by English influences here. At the same time they are not passionate admirers of the British Navy, whose methods of tactical training and general education they criticise as antiquated, superficial, and unscientific. As regards foreign material, they consider English warship machinery to be the best; but they prefer German guns, and would adopt them in preference to Armstrong models were it not that the whole of their plant was originally designed for the manufacture of these models, and would cost too much money to convert. Naval manœuvres are invariably conducted with as much realism as possible, and the umpires take immense pains to reach an accurate decision on every point, however insignificant. There is a good deal of jealousy, especially among the higher ranks, and complaints are frequently heard that So-and-So owes his promotion to favouritism; but I have not been able to find that this feeling is allowed to prejudice the interests of the service. The officers of the Japanese Navy believe that they could defeat either the German, French, or American navies, and hold their own against the British, taking into

[1] This was written in 1913, since when the manufacture of torpedoes has been taken up in Japan, and is now proceeding on a large scale.

account the opportunities which their magnificent strategical position would give them for an offensive-defensive plan of campaign. But, as I have said, their confidence knows no bounds, and I verily believe that the Navy would cheerfully engage in a war against a coalition able to outnumber it by three to one.'

It would be a poor compliment to Japanese naval men to call them brave. That they certainly are; but to great personal courage they add a fierce tenacity which is no less impressive. Both qualities were seen to advantage in the wars with China and Russia. In the former campaign the Japanese torpedo-boats made repeated attacks on the harbour of Wei-hai-wei in weather conditions that might have daunted the boldest hearts. So intense was the cold that men in the attacking boats were frozen to death at their posts. But the survivors carried on and eventually put the entire Chinese fleet out of action. Ten years later the same heroic courage was displayed by the crews of torpedo-craft and blockships off Port Arthur. These and similar incidents—*e.g.* that of the *Kinshu-Maru*, when Japanese officers and men on board the transport refused to surrender, and, after giving three cheers for the Emperor, committed 'harikari,' facing the Russian warship—prove beyond question that the warriors of Japan hold their lives cheap and will readily sacrifice them even when no direct military advantage is to be attained. But with all their courage and contempt for death the Japanese can exhibit great discretion when the occasion calls for it. This was demonstrated by their naval tactics in the Russian War. Knowing the integrity of the Fleet to be a fundamental con-

dition of ultimate victory, Admiral Togo prudently refrained from unnecessarily exposing his ships; and, as at the Battle of Round Island, on August 10, 1904, preferred to break off action as soon as the objective in view had been reached, rather than incur the risk of losing ships by pressing home his success.

Japanese bluejackets compare well in intelligence, physique, and smartness with the men of any navy in the world. It has often been stated that they are drawn chiefly from the lowest social stratum, but this is scarcely correct. As noted above, many of them have previously served in the fisheries or whaling fleets, and are therefore habituated to sea life before they come to the Navy. Taken as a whole, they are a fine body of men, very amenable to discipline under good officers, but liable to get out of hand if treated with harshness or injustice. As a matter of fact, cases of insubordination, not to say mutinous conduct, are not uncommon in the Japanese Navy, and more than one unpopular officer has mysteriously disappeared at sea. But discipline as a rule is very good indeed, although it is sometimes enforced by methods that would appear strange, and even mediæval, to Westerners. As a distinguished Japanese flag officer said, shortly after the Russian War: 'You can do anything with our sailors, and get them to do anything for you, provided that you scrupulously observe four rules: first, feed them well, preferably on a Western dietary; secondly, treat them with politeness and consideration; thirdly, do not encourage them to read the newspapers, least of all the gutter journals of Tokyo and Osaka; and, fourthly, drill them into the fact

that the Navy has nothing to do with politics, but exists for the glory of Japan.' These injunctions have a familiar ring in Western ears. During the last few years the Japanese Communists have attempted to extend their propaganda to the Navy, but apparently without any great success. There is no evidence that the Japanese lower deck *personnel* of to-day is less loyal or less devoted to duty than it was at the time of the Russian War. The men are very quick to pick up technical instruction, and 'gadgets' of every kind appear to have an irresistible fascination for them. The more complex a piece of mechanism the more strongly does it appeal to the Japanese bluejacket. The deepest mysteries of gunnery and torpedo work have no terrors for him. The men undoubtedly take a keen interest in the technical side of their work, and become very proficient in the handling of their weapons.

The strength of the Japanese naval *personnel* at various periods is shown in the following table:

	Executive Officers.	Other Ranks and Ratings.	Total.
1902 . . .	1,200	29,000	30,200
1904 . . .	1,350	31,000	32,350
1906 . . .	1,500	37,700	39,200
1908 . . .	1,750	44,000	45,750
1910 . . .	1,770	42,000	43,770
1912 . . .	1,900	48,000	50,700
1914 . . .	2,400	53,300	55,700
1916 . . .	2,470	58,000	60,470
1918 . . .	2,600	67,000	69,600
1920 . . .	2,750	73,500	76,250
1922 (estimated) .	2,900	75,500	78,400
1924 (estimated) .	3,150	79,000	82,150

At the close of the Great War the Japanese naval reserve numbered 38,000 officers and men, and by 1920 the total had risen above 41,000. It is the intention of the Navy Department to increase the reserve to at least 43,000 by 1922 and to 45,000 by 1924. Should this purpose be realised the Navy in the last-named year will have at its disposal a grand total of 127,000 officers and men, active and reservists. As the rule is that reservists of the first line—who remain in this category for seven years—must put in at least one hundred days of sea training in Imperial warships during that period, they are not allowed to grow stale, and their immediate war value therefore remains fairly high.

Japanese warships of every type carry complements somewhat larger than is usual in the British or American navies, and the proportion of executive and warrant officers is noticeably higher. The aim of this system is to duplicate, as far as possible, the *personnel* of every important fighting station in the ship. For instance, battleships of the larger type have two gunnery officers—usually a Commander and a Lieutenant-Commander; and in the *Fuso* class no less than fourteen commissioned officers are attached to the gunnery staff of each ship. Thanks to the large number of stokers they carry, the coal-burning ships of the Fleet can generally be relied upon to maintain their top speed so long as the coal lasts. While the mess decks of a Japanese warship seem cramped and overcrowded, and the allotment of cubic space per man is considerably less than in European navies, the living quarters are kept scrupulously clean and neat, and great attention is paid to proper ventilation.

This fact, together with the cleanly personal habits of the men, the wholesome food, and the skilled medical treatment they receive, results in an excellent record of health for the Navy. Physical culture, which has always been popular in Japan, occupies a prominent place in the system of naval training, and Japanese naval athletes are generally able to hold their own with the best. So far as *personnel* is concerned, therefore, the Japanese Navy stands at a high level of efficiency. Not only are the officers and men of a remarkably good type, but there is no shortage of them ; nor, up to the present, has any difficulty been found in keeping all vessels manned with full complements. The entire Navy, including old ships and auxiliaries fit for active service, could be mobilised without seriously depleting the first category of reservists. Moreover, the training establishments afloat and ashore are organised to deal with a sudden expansion of *personnel* such as might become necessary in time of crisis.

The strength and composition of the Japanese Navy at the beginning of 1921 are set forth in the following table :

	Completed.	Building and Authorised.
Dreadnought battleships .	6	7
Battle-cruisers . . .	4	8
Pre-Dreadnought battleships	8	..
Armoured cruisers . .	12	..
2nd class cruisers . .	17	16
Coast defence ships, 1st class	3	..
Do. do. 2nd class	12	..
Gunboats	8	5

	Completed.	Building and Authorised.
Destroyers, 1st class . .	14	25
Do. 2nd class . .	36	20
Do. 3rd class . .	42	..
Torpedo-boats, 1st class .	12	..
Do. 2nd class .	8	..
Submarines . . .	42	65 (or 76)

A few words must be said in explanation of the official method of classifying naval material. The term 'battleship' is applied indiscriminately to vessels built twenty-two years ago and to the latest super-Dreadnoughts; and among the 'battle-cruisers' are three ships, *Ikoma*, *Ibuki*, and *Kurama*, which were launched in 1906-7, and as regards tonnage, speed, battery, and protection are really armoured cruisers. Under the heading of 'First-class Cruisers' are listed all remaining cruisers above 7000 tons; cruising ships below this displacement being designated 'Second-class Cruisers.' Three old battleships, *Fuji*, *Suwo*, and *Iwami*—the last two being prizes captured from Russia—are registered as 'First-class Coast Defence Ships'; and a miscellaneous collection of twelve old vessels, none displacing more than 7000 tons, are labelled 'Second-class Coast Defence Ships.' Gunboats are divided into two classes: 1st class, above 800 tons; 2nd class, below 800 tons. There are three classes of destroyers: 1st class, above 1000 tons; 2nd class, from 1000 to 600 tons; 3rd class, below 600 tons. While submarines are not as yet officially differentiated, it is customary to rate those above 750 tons as first-class, or ocean-going, and smaller types as second-class, or coastal boats. In dealing here with the various types of Japanese war vessels, it

will be less confusing to keep to the conventional Western system of classification.

The oldest battleship now on the active list is the *Fuji*, which was launched on the Thames in 1896. A sister vessel, the *Yashima*, was built at Elswick in the same year. At the time of their completion they were looked upon as two of the finest and fastest battleships afloat. Both performed useful service in the Russo-Japanese War, in the course of which, however, the career of the *Yashima* was terminated by a mine. The *Fuji* is of 12,320 tons displacement, and when new could reach a speed of almost 19 knots. She is heavily armoured, carrying 18 in. of Harveyised steel on the water-line amidships, and mounts a primary battery of four 12-in. guns, together with ten 6-in. and many small quick-firers. This ship was the first to be fitted with the Elswick pattern of submerged torpedo tube. The *Fuji*, which has lost practically all her fighting value, is used partly as a school for seamanship and partly as a training ship for stokers, having been equipped with several new boilers for this latter purpose. The two next oldest battleships, *Asahi* and *Shikishima*, which were also built in England, were launched in 1899 and 1898 respectively. Their displacement is larger and the secondary armament stronger, but in other respects they do not differ materially from the *Fuji*. The *Asahi* is employed for training seamen-gunners, the *Shikishima* as a submarine depot ship. Fourth on the list comes the *Mikasa*, famous as Admiral Togo's flagship throughout the Russian War. This ship was laid down at Burrow-in-Furness in 1899. Her displacement is 15,200 tons, her original maximum speed was 18·6 knots, and she carries the

same armament as the preceding class, viz. four 12-in. and fourteen 6-in. Shortly after the conclusion of peace with Russia the *Mikasa* blew up and sank at her moorings in Sasebo harbour, but was raised and repaired. She is no longer in full commission, but, unlike most of the older ships in reserve, she is not used for training or auxiliary purposes, doubtless because of the veneration in which she is justly held by the Navy. The *Iwami*, formerly the Russian battleship *Orel*, is the largest and most effective ship among the prizes taken during the war of 1904-5. She dates from 1900, displaces 13,500 tons, and has a speed of about 18 knots. Her original armament has been replaced by four 12-in. and six 8-in. guns of Japanese construction. Her new owners, it is said, spent some £200,000 on the reconstruction and rearmament of this vessel, but her present-day fighting value is negligible, and she is defective both in armour protection and stability. The *Hizen* was launched in 1900 as the Russian battleship *Retvizan*, and was among the ships which the Japanese found scuttled at Port Arthur when they captured that stronghold. Salved and repaired at heavy cost, she was commissioned under the Japanese flag in February 1907. She is of 12,700 tons, with a nominal speed of 18 knots, and retains her old armament of four 12-in. and twelve 6-in. guns. This ship took part in the manœuvres of 1913, but she does not appear to have been put into full commission since then. The *Suwo* (ex-Russian *Pobieda*) is another of the battleships captured at Port Arthur and repaired at great expense. Her original displacement of 12,674 tons has been increased to 13,500 by the extra material worked into her during reconstruction. When new she could

steam at 18¼ knots, but her present speed is not above 16 knots, owing in part to the 800 tons of ballast with which the Japanese found it necessary to improve her stability. As a Russian ship she was armed with four 10-in. and eleven 6-in. guns, and these weapons, with the exception of one 6-in., are still on board. She occasionally goes to sea as a training ship for naval cadets, but is not considered to have any value for war purposes.

The *Kashima* and *Katori*, launched in England in 1905, were the last two Japanese battleships to be built abroad. They displace 16,400 tons and 15,950 tons respectively, but essentially they are sister ships. The speed on trial was over 18½ knots. Their design is of interest as revealing the Japanese partiality for a numerous armament of heavy guns, even before the Dreadnought era. In this case a battery of four 12-in., four 10-in., and twelve 6-in. guns was provided, so that the Japanese ships were more powerfully armed than their British contemporaries of the *King Edward VII.* class. A further striking advance in gun-power was made in the *Aki* and *Satsuma*, the first battleships to be built in Japan. The *Aki*, begun at Kure in 1905, displaces 19,800 tons, and her machinery, which was manufactured in America, was designed to give her a speed of 20 knots, which was slightly exceeded on trial. The *Satsuma*, of 19,350 tons, was more of a native production, for in her case both hull and machinery were built at Yokosuka, the designed speed being 18¼ knots. The heavy armament, uniform to both ships, consists of four 12-in. and twelve 10-in. guns; but whereas the *Aki* has a tertiary battery of eight 6-in., the *Satsuma* mounts, instead, twelve 4·7-in. Although these vessels are

not of the 'all-big-gun' type, and the presence of two calibres such as 12-in. and 10-in. renders effective fire control difficult, they are probably superior in all-round tactical value to the earliest American Dreadnoughts, *Michigan* and *South Carolina*. Despite the fact that a great deal of the building material and equipment was imported, the construction of such large and powerful ships was a very creditable achievement for the Japanese yards concerned. The *Aki* and *Satsuma* took nearly five years to complete from the date of laying the keels, and long before they were in commission it became evident that their design had been rendered obsolete by concurrent developments in the Dreadnought type. This fact caused great disappointment in Japan, and led to some recrimination, as may be judged by the following extract from a Tokyo newspaper of March 1910: 'The Navy Department announced last week that foreign battleships with an armament of ten 14-in. guns are now building. This information is doubtless communicated to prepare us for a programme of similar ships. We admit that our ships must not be inferior in battle power to those of foreign nations, but we beg to remind the Navy Department that the *Aki* and *Satsuma* battleships, which are still unfinished, are demonstrably inferior in armament to many foreign ships which have been laid down in recent years. Wealthy countries like England and America can afford now and again to waste a few millions through an error in naval design, but we are in a different case, and it is a positive tragedy that the expenditure of nearly £4,000,000 on building the *Aki* and *Satsuma* should have merely produced two ships which are so much inferior in battle power to foreign ships

which were laid down after them but are already in service.' Criticism such as this was rather unfair, considering that the building of heavy warships in the home yards was undertaken mainly to satisfy national opinion, and in spite of warnings by the Government that battleship construction at home would be a slow and costly process until the shipyards had gained more experience.

The first genuine Japanese Dreadnoughts were the *Kawachi*, laid down at Kure dockyard in January 1909; and the *Settsu*, began at Yokosuka in April of the same year. They were identical in every feature but length, the *Kawachi* being 526 ft. and the *Settsu* 533 ft. over all. Other details [1] were: breadth, 84 ft. $1\frac{3}{4}$ in.; mean draught, 27 ft. 8 in.; displacement, 21,420 tons; turbine machinery of 25,000 shaft horse-power; speed 20 knots. Armour protection: belt, 12-in.; turrets, 11-in.; plating over secondary guns, 6-in.; armour deck, $1\frac{1}{8}$ in. Armament: twelve 12-in. (four of 50 calibres length, eight of 45 calibres), ten 6-in., eight 4·7-in. and twelve smaller guns, with five torpedo tubes. The *Kawachi* was launched on the 15th October 1910, the *Settsu* on the 30th March 1911. In this design there are two outstanding defects: first, the disposition of the turrets, which is such that only eight of the twelve big guns can be fought on either broadside; and, secondly, the mounting of two different models of 12-in. gun in one ship, a novel arrangement which, while economising weight, is detrimental to the simple and accurate control of the main armament in battle. Owing to the disposition of the turrets, the full benefit of the extra weight of fire is not reaped, and the broadside of the *Kawachi* or

[1] Supplied by Rear-Admiral Constructor Motoki Kondo, I.J.N.

Settsu, weighing 6800 lb., is only 400 lb. heavier than that of the pre-Dreadnought *Aki*. Furthermore, the horizontal armour protection of the class is inadequate. The *Kawachi* was completed within thirty-six months from the laying of the keel, a very good performance considering that she was the first real Dreadnought to be built in Japan. Her sister, the *Settsu*, took rather longer to complete. The *Kawachi* was unfortunately destroyed by an internal explosion in July 1918. As she was absolutely shattered by the explosion, no salvage work has been undertaken. The loss of this fine ship was a heavy blow to Japan.

Meanwhile the naval authorities had decided that ships of the battle-cruiser type, then building in England and Germany, were necessary to Japan, and steps were taken to create a squadron of four such vessels. With characteristic boldness they designed a type larger and more powerful than any contemporary battle-cruiser, and embodying many new features. The first ship, *Kon-go*, was ordered from Messrs. Vickers, Ltd., Barrow, and laid down there in January 1911. The three other vessels of this class, *Hi-yei*, *Haruna*, and *Kirishima*, were begun ten to fourteen months later by the Yokosuka yard, the Kawasaki Company, and the Mitsu Bishi Company. Particulars of the class are: length over all, 704 ft.; beam, 92 or 92½ ft.; displacement, 27,500 to 27,613 tons. Machinery, Parsons or Curtis turbines, water-tube coal-burning boilers with auxiliary oil-sprays, designed for 64,000 shaft horse-power and a speed of 27½ knots. The protection from gunfire, which consists of an 8-in. belt, 9-in. armour on the turrets, and a 2¾-in. steel deck, was regarded as very efficient at the time,

but subsequent experience in the Great War demonstrated the necessity for thicker armour in ships exposed to the attack of modern naval ordnance, and it is doubtful, therefore, whether these four Japanese battle-cruisers could withstand for long the terrific hammering administered by the heavy guns of the present day. On the other hand, their magazines are well protected, and the subdivision of the hull below the waterline is so complete that a single torpedo would probably fail to disable one of these ships. They are armed with eight 14-in. guns, sixteen 6-in., some smaller quick-firing and anti-aircraft guns, and eight torpedo tubes. Japanese naval architects claim the sole credit for the design of this class, but it is believed that certain of the most difficult technical problems were worked out by Messrs. Vickers. It was said at the time that the design was so much admired in England that the plans of H.M.S. *Tiger* were modified to incorporate some of its features. This, however, was incorrect. The *Kon-go*, built in England, was completed in thirty-one months; while the other three ships, built in Japan, took from thirty to thirty-eight months to complete. All four ships slightly exceeded the contract speed on trial.

As the funds voted under the naval programme of 1911 did not suffice for more than one battleship, it was decided to build a vessel of unprecedented power. This ship, the *Fuso*, was laid down at Kure in March 1912. She was at least 3000 tons heavier than any battleship then building for Great Britain or the United States, one knot faster, and more powerfully gunned. The construction of the greatest battleship in the world by a country which had taken up armoured shipbuilding only a

few years beforehand is a further proof of the self-reliant and progressive spirit of modern Japan. The *Fuso* is a vessel 673 ft. in length, 94 ft. broad, and 30,600 tons in displacement. She is fitted with turbine machinery which develops 40,000 shaft horse-power, equivalent to a speed of 22 knots. The hull is armoured with 12-in. plates on the waterline, and the generous amount of beam has made it possible to provide very efficient protection against torpedo explosion. Twelve 14-in. guns, in six turrets, constitute the main armament, which discharges at each broadside a weight of seven and a half tons of steel and high explosive. In addition there are sixteen 6-in. and four 12-pounders for repelling attack by torpedo-boats or aircraft. Six torpedo tubes are fitted below the waterline. The *Fuso* has proved to be a very successful ship. During her trials she reached a speed of 23·2 knots, and the simultaneous firing of all the guns had no visible effect on the structure or machinery. A second ship, the *Yamashiro*, was built to the same design in 1913. Two further vessels of the same general type, *Ise* and *Hiuga*, were laid down in 1915. In these, however, the displacement was increased to 31,260 tons, the speed to 23 knots, and the secondary armament altered to twenty 5·5-in. guns, while a different disposition was adopted for the midship turrets of the main battery. Save for these minor variations the four ships represent one type, and constitute a homogeneous battle squadron of remarkable power, although some Japanese critics consider that the Navy Department would have done better to build the *Ise* and *Hiuga* to an entirely new design, which would have made them equal to the strongest

battleships completed abroad during the war period. All four vessels are very steady at sea, which conduces to accurate shooting.

The next two battleships, *Nagato* and *Mutsu*, are chiefly remarkable by reason of their being the first Japanese ships to be armed with 16-in. guns. The *Nagato*, laid down at Kure in August 1917, was launched in November 1919, and completed early in 1921. The *Mutsu* was begun at Yokosuka in June 1918, launched in May 1920, and is due to be commissioned in September 1921. Their dimensions are: length, 700 ft.; breadth, 95 ft.; displacement, 33,800 tons; speed 23½ knots. Nothing definite is known as to the armour and underwater protection of these ships, except that it is based upon the lessons of the Great War. The main armament is eight 16-in. guns 45 calibres long, firing projectiles of nearly 2200 lb. weight at a maximum range of 44,000 yards. The first weapons of this type were manufactured at Kure and Muroran in 1918. From the scanty information which has leaked out they appear to be of a model somewhat more powerful than the American 16-in. 45 calibre gun. The armour-piercing projectile weighs about 2190 lb., and is fired with a muzzle velocity of 2800 foot-seconds. It is said to be capable of perforating a 12-in. steel plate at a range of 12,000 yards. As in the *Ise* and *Hiuga*, the secondary armament of the *Nagato* and *Mutsu* comprises twenty 5·5-in. guns per ship. The substitution of the 5·5-in. for the 6-in. quick-firer in the secondary batteries of recent Japanese ships was due to considerations of weight and rapidity of action. The 5·5-in. piece weighs only 6¼ tons, as against 8½ tons for the 6-in. Its projectile, of 82 lb., has

less smashing power than the 6-in. 100 lb. shell, but the rate of fire is said to be at least twelve per cent. higher. Guns of 5·5-in. calibre are mounted also in the British battle-cruiser *Hood*. It is worth noting that while the Japanese are thus reducing the calibre and increasing the number of their secondary guns, the Americans are following an opposite policy, their latest capital ships having an auxiliary armament of 6-in. 105-pounder guns in place of the 5-in. 50-pounder model which has been exclusively employed up to now. Another striking feature of the *Nagato* class is the powerful torpedo armament, consisting of eight tubes per ship. Geared turbines are fitted in these ships.

The *Kaga* and *Tosa*, begun in 1920 by the Kawasaki yard at Kobe and the Mitsu Bishi yard at Nagasaki, were at first described as sisters to the *Nagato*, but later information shows them to be of a much more formidable type. Japanese newspapers have referred to them as a 'reply' to the American *Indiana* class, but their reputed displacement of 40,600 tons is 2600 tons below that of the American ships. The following particulars of the *Kaga* and *Tosa*, although unofficial, are believed to be substantially correct: length, 700 ft.; breadth, 100 ft.; speed, 23½ knots. Main armament: ten or twelve 16-in. 45 calibre guns in five or six double turrets disposed on the centreline; secondary battery, twenty 5·5-in. quick-firers; four anti-aircraft guns; eight torpedo tubes. The water-line is defended by a 14-in. armour belt, the gun turrets are built up of 15-in. armour, and over the vital parts of the ship there are three steel decks with a total thickness of about 6 in. The under-body of the hull is protected against torpedo or

mine explosion by a special system of cofferdams which has been devised as the result of exhaustive experiments carried out by the Constructive Bureau of the Navy Department. No details of this system have been revealed, but it appears to resemble the 'bulge' fitted to British ships during the war. Should the main armament of the *Kaga* and *Tosa* be confirmed as twelve 16-in. guns, they will possess about the same degree of fighting value as the U.S. *Indiana* class. Their design has been greatly modified and improved since the ships were authorised, and as, according to newspaper reports, a sum of no less than £20,000,000 has been set aside for their construction, they are the most costly warships to be designed up to now. Probably, however, they will be surpassed in size, power, and cost by the four new battleships sanctioned under the latest programme, and which are expected to mount guns of 18-in. calibre. It is known that guns of this size were designed at Kure in 1920, and one or more experimental 18-in. weapons may be already in process of manufacture. The contract for the *Kaga* stipulates for delivery by December 1922; that for the *Tosa* in August of the same year. Both ships, therefore, are likely to be commissioned in advance of the first units of the U.S. *Indiana* class, and Japan may thus enjoy, for a time, the distinction of possessing the largest and most formidable fighting ships in the world.

Since the last three ships of the *Kon-go* class were sanctioned in 1911, no further battle-cruisers were authorised until 1919, when funds were voted for building the *Amagi* and *Akagi*. The next year's programme included two further ships of the same

type, *Atago* and *Takao*. All four vessels were expected to be in hand by May 1920.

	Laid down at		*To be completed*
Amagi	Yokosuka	in December 1920.	Summer 1923.
Akagi	Kure	in January 1921.	Summer 1923.
Atago	Kobe	in April 1921.	Autumn 1923.
Takao	Nagasaki	in May 1921.	Autumn 1923.

Except that the displacement is to be 43,500 tons, no authentic information of these ships has transpired, and although the Japanese Press has published a number of details, experience teaches us to be wary of placing too much credence in technical data from this quarter. It is not yet certain whether all the four ships are to be of uniform design, but this is very probable; nor is it known whether the displacement given is the normal or full load figure. In the former event these vessels will be of exactly the same tonnage as the six American battle-cruisers now under construction. The following details of *Amagi* and *Akagi*, compiled from Japanese newspaper reports, are given with all reserve: length over all, 880 ft.; breadth, 103 ft.; displacement, 43,500 tons; speed, 33 knots; cruising radius, 'half way round the world.' The armament is generally given as eight 16-in. guns, but other reports suggest a main battery of 18-in. weapons, which may be contemplated for the two later ships, *Atago* and *Takao*. The figure of cost, given as £9,000,000 per ship, is almost certainly incorrect, and probably should be nearer £11,000,000.

Four additional battle-cruisers, authorised by the new programme, are to be laid down before the end of 1922, but no details of these vessels are available. Their completion, by the end of 1925 or thereabouts,

will bring the Japanese Battle-cruiser Fleet up to a total of twelve ships. At that date the four *Kon-gos*, which will have been in service upwards of ten years, can no longer be rated as first-class, though their speed and gun-power will make them still valuable ships.

Among the many old armoured cruisers in the Japanese Navy, the *Ikoma*, *Kurama*, and *Ibuki* are the largest and most effective ships. They are officially classified as battle-cruisers, though in view of the special significance which now attaches to this term they would be more aptly described as fast battleships. The circumstances in which the *Tsukuba* (since lost) and *Ikoma* were built have been recorded in an earlier chapter. They were designed in 1904, *i.e.* while the war with Russia was in progress, at the direct instance of Admiral Togo, whose early encounters with the enemy had convinced him of the need for a type of ship combining the speed of a cruiser with the fighting power of a battleship. The idea was not a new one, for the Italians, many years before, had built ships embodying these principles, which at a subsequent period also found expression in the British battleships *Barfleur*, *Centurion*, *Renown*, and, still later, in the ships of the *Exmouth* class. The *Ikoma*, laid down at Kure in March 1905, was completed two and a half years later. She is 475 ft. in length, and displaces 13,750 tons. She was designed for a speed of 20½ knots, but made nearly 22 knots on the trial run, a result the more creditable in that her machinery had been built in Japan, where the manufacturers at that time had but little experience in the production of high-powered warship machinery. To obtain this speed in conjunction with a heavy armament it was

necessary to cut down the protection, and the belt was therefore given a maximum thickness of 7 in. She mounted the battleship's standard main armament of four 12-in. guns, together with ten 6-in. and eight 4·7-in. quick-firers, and three torpedo tubes. Apart from her other qualities, the *Ikoma* is a remarkably handsome ship, and she and her ill-fated sister, *Tsukuba*, were the first men-of-war to have the now familiar and very graceful 'swan' or 'clipper' stem, which has since come into almost universal vogue in place of the ram bow. The *Ikoma's* present rôle is that of a sea-going training ship for the gunnery and torpedo branch. In the *Kurama* and *Ibuki*, which were laid down some months later as improved versions of the same basic design, the length was increased to 485 ft., the displacement to 14,600 tons, and the speed to 21¼-22 knots. The original scheme of armour protection was adhered to, but the fighting power was strengthened by a secondary battery of 8-in. guns, the armament of each ship comprising four 12-in., eight 8-in., and fourteen 4·7-in. guns, with three torpedo tubes. In the pre-Dreadnought era the *Kurama* and *Ibuki* would have been justly classed as very powerful ships, and even to-day they possess considerable utility.

Since the older armoured cruisers are now obsolete, and would not be included in the first-line fleet in the event of war, they do not call for a lengthy description. The *Nisshin* and *Kasuga*, built in Italy for the Argentine Government, were purchased by Japan on the eve of the war with Russia, and joined her fleet in time to take part in the campaign. They displace 7750 tons, have a speed of 20 knots, and mount an armament of four 8-in. and fourteen

6-in. guns, the single 10-in. bow-chaser originally carried by the *Kasuga* having been replaced some years ago by a pair of 8-in. guns. Both ships are now serving as tenders to the destroyer flotillas. The *Aso* (ex *Bayan*), of 7800 tons and 21 knots, is a prize captured from Russia. Under the Russian flag she acquitted herself honourably in the campaign of 1904, and after being scuttled at the fall of Port Arthur was salved and repaired at Sasebo. She has stouter plating than was usually fitted to armoured cruisers of her period, and she carries two 8-in. and eight 6-in. guns. Although launched as long ago as 1900 she can still come within a knot of her designed speed. In point of age she is preceded by a group of six ships which constituted the fast wing of the Japanese Battle Fleet during the Russian War, and whose excellent work was largely responsible for the survival of the armoured cruiser type several years after its period of real usefulness had expired. In spite of minor dimensional differences, the six ships, *Asama*, *Tokiwa*, *Adzuma*, *Yakumo*, *Idzumo*, and *Iwate*, are essentially of common design, and particulars of the *Asama* will therefore suffice: 9700 tons, 21 knots, armed with four 8-in. and fourteen 6-in. guns. The majority of these vessels now serve as training ships for naval cadets, but the *Idzumo* and *Iwate* are mother-ships to destroyer flotillas.

The small fast cruiser, mounting the heaviest armament compatible with displacement, has always been a favourite type in the Japanese Navy. One of the earliest representatives of this class was the *Tsukushi*, launched at Elswick in 1881. Although no more than 1380 tons in displacement and 210 ft. in length, this ship steamed at a speed of $16\frac{1}{2}$ knots

and mounted the powerful armament of two 10-in. 25-ton guns, four 4·7-in., and six smaller weapons. In 1883 Messrs. Armstrongs launched the famous Chilean cruiser *Esmeralda*, of 2950 tons and 18·3 knots speed, armed with two 10-in. and six 6-in. guns. This vessel was greatly admired in Japan, by whom an effort was made to purchase her from Chile; but the price asked was too high, and it was not until 1895 that the *Esmeralda* passed into Japanese hands and became the *Idzumi*. Two improved copies of this ship had, however, been ordered from Elswick in 1884, and were launched in the following year as the *Naniwa* and *Takachiho*. They had the same armament as the *Esmeralda*, but displaced 3700 tons and could steam at a speed of 18¾ knots. Three very remarkable cruisers designed by M. Bertin, the French naval architect, were ordered in the late Eighties, the *Itsukushima* and *Matsushima* being built in France, and the third ship, *Hashidate*, at Yokosuka yard from the same designs. On the relatively small displacement of 4278 tons each of these vessels carried one 12·5-in. gun and eleven or twelve 4·7-in. quick-firers. Their speed was 16 knots. The big gun had been mounted in order to render the ships capable of dealing with the Chinese ironclads; but when in due course the Battle of the Yalu came to be fought, the 12·5-in. guns of the Japanese cruisers proved to be far less effective than their 6-in. and 4·7-in. quick-firers. The *Itsukushima* and her sisters had a tendency to heel over several degrees when the big gun was trained on the beam. Other notable cruisers of the early Japanese Navy were the *Yoshino*, *Chitose*, *Kasagi*, and *Takasago*, launched 1892-97, all of which could steam at 23 knots. The *Chitose*,

together with the still older cruisers *Hashidate* and *Akitsushima*, are still on the active list. The *Suma* and *Akashi*, launched 1895-97, are 20-knot protected cruisers of 2700 and 2800 tons, and represent a first and not very successful attempt to evolve a purely Japanese design of fast light-cruiser. Both ships are lacking in seaworthiness and stability. The *Tsugaru* was a Russian prize (ex *Pallada*) taken at Port Arthur. She was launched in 1899, displaces 6630 tons, and is armed with ten 6-in. guns. This vessel, which originally steamed at 20 knots, is reported to have been converted into a minelayer during 1918, and has probably been deprived of some of her guns. The *Niitaka* and *Tsushima* are Japanese-built vessels of 3420 tons, with a speed of 20 knots and a battery of six 6-in. guns. Both are excellent steamers, but their present fighting value is small.

The *Tone*, a second-class cruiser of 4105 tons, was laid down at Sasebo in 1906. It has been intended to build two ships of this class, but the money for the second unit was refused by the Diet. The *Tone* has proved a very successful ship. She attained on trial a speed of 23½ knots, and her fuel supply is sufficient to carry her a distance of 10,000 miles. She is armed with two 6-in. and ten 4·7-in. quick-firing guns. Owing to financial difficulties no further light-cruisers were built until 1910, in which year the sister ships *Hirado*, *Yahagi*, and *Chikuma* were laid down. Their dimensions, etc., are: length, 475 ft.; breadth, 46½ ft.; speed, 26 knots; steaming radius, 10,000 miles; armament, eight 6-in. guns and three torpedo tubes. They were the first Japanese protected cruisers to be fitted with turbine machinery. No further vessels of this type were

authorised until 1916, when orders were placed for two ships corresponding in general features to the British 'light armoured cruisers' of the *Arethusa* class. The *Tatsuta* and *Tenryu*, as they are named, were laid down in 1917 and completed in 1919. Moulded with an eye to great speed, the lines of the hull are particularly fine. The overall length is 440 ft., the breadth 40¾ ft., the displacement 3500 tons. Turbine machinery of 45,000 horse-power gives a nominal speed of 31 knots, but the *Tenryu* is reported to have actually made 33 knots in service. These two are believed to be the first Japanese war ships fitted exclusively with oil-burning boilers. In all previous types, including destroyers, coal and oil are consumed in the furnaces, though in the faster vessels the proportion of coal-fired boilers has been steadily decreasing of late. Japanese hesitation to adopt the 'oil only' system for warships is due to the uncertainty respecting supplies. There are fairly large oil fields in Japan, but it is only in recent years that these have been exploited on modern principles. Thanks to the new methods of boring which have been introduced, the yield of oil has almost doubled since 1914. It is still insufficient to cover the home demand, and Japan is therefore compelled to import a considerable amount of oil; but hopes are entertained that the discovery and exploitation of new fields which are believed to exist will eventually result in a domestic supply large enough to meet all reasonable requirements. As it is, the increased yield of oil has encouraged the Navy Department to make wider use of a fuel which is incomparably superior to coal for naval purposes. The armament of the *Tenryu* class consists of four 5·5-in. 50 calibre

quick-firing guns, mounted on the centreline; one anti-aircraft gun, and six torpedo tubes. They are exceedingly fast and handy ships, able to turn within little more than their own length; and, with 900 tons of oil on board, they have a cruising radius of 6000 miles at economical speed. There is a 2-in. belt of high-tensile steel amidships.

Following these come five larger vessels, officially designated 'medium light armoured cruisers,' and named *Tama*, *Kuma*, *Kiso*, *Kitakami*, and *Oh-i*, which were authorised under the programmes of 1917 and 1918. The last of them will be in service by the summer of 1921. They displace 5500 tons, with a length of 535 ft., and have geared turbines and oil-burning boilers for a speed of 33 knots. The maximum oil capacity is about 1500 tons, equal to a cruising radius of 9000 miles. It is possible that a few of the twelve boilers are arranged for burning coal. An armour belt of $2\frac{1}{2}$ to 3 in. is fitted in way of machinery and boiler spaces. Of the seven 5·5-in. 50 calibre quick-firers which constitute the main armament, two are mounted on the forecastle, one at each side of the bridge, and the remaining three on the centreline aft. Four, or possibly six, torpedo tubes are mounted on the upper deck.

A further advance in dimensions and speed has been made in the case of the *Isudzu*, *Nagara*, and *Natori*, three cruisers provided for in the Navy estimates of 1919, and laid down the following year. These ships will displace over 6000 tons, their length being 560 ft., and the speed is estimated at $33\frac{1}{2}$ to 34 knots. They will have more substantial armour and under-water protection than the previous class, and the battery will comprise eight 5·5-in. or 6-in. guns, several anti-aircraft

weapons, and eight torpedo tubes. The building contracts, awarded to the Sasebo Dockyard, the Mitsu Bishi Co., and the Uraga Dock Co. call for delivery within twenty-two months, so that the three ships should be in service before the end of 1922. The *Yura*, a fourth vessel authorised in the 1920 programme, may be of the same type, but certain Japanese newspapers describe her as a 'large armoured cruiser,' to have a speed of 34 knots and a heavy battery of guns. She was to have been laid down at Sasebo in April 1921, and is therefore likely to be completed early in 1923. Twelve additional cruisers are included in the new naval programme which passed the Diet in 1920, and as the contracts for the first five, viz., *Abukuma*, *Ayase*, *Kinu*, *Minase*, and *Otonase*, had been placed by November of that year, it is probable that an early start would be made with the construction of these ships. No authentic details of them are available, but as the cost per ship is given as £1,750,000 they will probably be larger, faster, and more powerfully armed than any Japanese cruisers designed up to the present. Admiral Kato, the Minister of Marine, stated in November that the Fleet was in urgent need of fast cruisers, and he then recommended that three more of these vessels should be commenced in 1921. If this suggestion is adopted, eight of the twelve cruisers sanctioned under the 1920-2 Navy Bill will have been laid down within little more than twelve months after the passage of that measure. Excluding the *Tone*, whose speed of 23 knots does not entitle her to be rated as a modern light-cruiser, there are twenty-six Japanese vessels of this type, completed, building, or authorised, and the whole of this cruiser

fleet is practically certain to be ready for service by 1925. The corresponding total for the United States Navy is only ten ships.

As the Japanese torpedo and submarine services are dealt with in a special chapter, this one may be concluded with a brief reference to the auxiliary vessels of the Fleet. Some years ago the Navy Department proposed to build a fast minelaying cruiser of 4000 tons, somewhat after the design of the German ships *Nautilus* and *Albatross*, but of much higher speed. This project, however, was dropped, and is not likely to be revived, for the Japanese now consider the submarine to be the most effective medium for minelaying at great distances from the home coast. On the other hand, a fairly large number of small vessels have been built for the coastal mining service. The seaboard of Japan is so extensive and so rich in harbours that any scheme of defence by fixed fortifications would involve a gigantic expenditure. Consequently, while the principal naval and mercantile harbours are protected by forts, the immobile defence of the coast as a whole is entrusted to the mining branch of the Navy. Besides the cruiser *Tsugaru*, which is being fitted up for the carriage of mines, there is the special mine ship *Katsuriki*, of 2000 tons and 13 knots speed, completed in 1917, with a capacity of 150 mines; and a group of twelve smaller minelayers, displacing 430 to 500 tons, with a speed of 12 knots. Six further minelayers, possibly of a larger and faster type, are to be built under the current programme. For minelaying service in harbours and fairways there are 25 small vessels, averaging 300 tons and 11½ knots.

The increasing use of oil as a fuel for the Navy has necessitated the provision of special tankers to accompany the Fleet. Only two such ships have been completed to date, but seven large vessels, of 8000 to 12,000 tons, are now building, and others have been ordered. During the war with Russia, practically all the colliers needed for the Fleet were chartered from Japanese companies; and similar arrangements would be made in a future emergency. The only colliers owned by the Navy are two ships of 8750 tons, built in 1917-20. There are four small steamers, none above 450 tons, in service as depot ships to destroyer flotillas. Serving in a similar capacity to the submarine flotillas are the battleship *Shikishima* and the cruiser *Aso*, together with three special tenders: the *Komahashi*, of 1230 tons and 14 knots; the *Karasaki*, an ex-Russian liner of 6710 tons and 13 knots; and the old torpedo gunboat *Tatsuta*, renamed *Nagaura*. The naval transport *Wakamiya*, 7600 tons and 10 knots, is employed as a seaplane carrier, pending the completion of the *Hosho*, a vessel specially designed for this work. No details of her are known. The list of auxiliaries is completed by six supply ships and transports (including two German prizes); the repair ship *Kwanto*, of 10,000 tons; and a number of salvage and surveying ships, none of which possess any fighting value.

CHAPTER VIII

THE JAPANESE NAVY: TORPEDO-CRAFT, SUBMARINES AND AIRCRAFT

For obvious reasons the torpedo has been from its inception a favourite weapon with those countries which have to maintain a naval establishment on limited funds. The high degree of efficiency attained by the torpedo branch of the old German Navy was due to the circumstance that special attention had been paid to the development and use of this arm from the days when Germany did not feel wealthy enough to afford the luxury of a great ironclad fleet. Motives of economy also led Japan to provide herself with torpedo-craft at a very early stage of her naval career. She began in 1879 by ordering four small boats in England. Built by Messrs. Yarrow, they were of 40 tons displacement and 100 ft. in length. Engines of 620 horse-power gave them a speed of 20 knots in smooth water. These little craft having proved quite successful, a much larger experimental boat was ordered from Yarrow's in 1885. This was the *Kotaka*, a 170-ft. boat displacing 190 tons, with a speed of 19 knots. A novel feature was the armouring of her machinery compartments with 1-in. steel plates, the rest of the hull being very minutely subdivided by water-tight bulkheads. This made her practically immune from serious injury by the machine-guns which at that period were carried by large ships for repelling

torpedo attack. The *Kotaka* was armed with six 14-in. torpedo tubes and four machine-guns. In 1888 seventeen first-class torpedo-boats were ordered from France. They were all of the same type, 115 ft. long, displacement 56 tons, speed 20 knots, and armed with 14-in. torpedoes. Many of them were shipped from France in sections and put together at Kobe. In 1890 single specimen boats were ordered from France and Germany, from the designs of which about 35 similar craft were built in Japan. These were 90-tonners, with a speed of 23 knots, and together with the older vessels they bore the brunt of the torpedo fighting at Port Arthur and Wei-hai-wei during the China War. They materially assisted in the capture of Port Arthur by dashing boldly into the harbour under cover of a rain squall, and machine-gunning the Chinese troops on shore. This daring feat was highly commended by foreign officers who witnessed the attack. From Port Arthur they proceeded to Wei-hai-wei, where the Chinese Admiral Ting had taken refuge with his fleet. In the course of four successive night attacks, undertaken in appalling weather and in face of determined resistance, they torpedoed four ships and so damaged the remainder that Ting found it expedient to surrender.

During the next ten years the Japanese torpedo flotilla was greatly enlarged. A number of fine 30-knot destroyers were ordered from England, and many smaller boats were built in Japan; so that when war with Russia broke out in 1904 the flotilla comprised about 20 destroyers, 58 first-class and 30 second-class torpedo-boats. Some mention has already been made of the destroyer attack on Port Arthur, which practically immobilised the

Russian squadron at the beginning of hostilities. But having so brilliantly inaugurated the war, the Japanese torpedo service did not afterwards enjoy many opportunities of distinguishing itself. Later attacks on the Port Arthur squadron met with indifferent success, and at the great naval action of Tsushima the work of the destroyers was limited to administering the *coup de grâce* to disabled Russian ships. Between 1905 and 1909 thirty-five third-class destroyers were built in the Yokosuka, Kure, Maidzuru, Sasebo, Osaka, Kobe, Nagasaki, and Uraga yards. All these vessels were constructed to a standard design: displacement 380 tons, 226 ft. long, speed 29 knots, with a coal capacity of 100 tons. They had a radius of 1200 miles at a speed of 15 knots. As the experience gained during the war with Russia had demonstrated the value of powerful artillery in vessels of the destroyer type, each of these thirty-six boats was given the exceptionally heavy armament of six 12-pounder guns, together with two torpedo tubes. From 1909 to the outbreak of the Great War very few destroyers were built in Japan, the only boats completed within this period being two of the first and two of the second class. The former pair were, however, the largest and most formidable destroyers afloat when they were completed. They were 324 ft. long, displaced 1150 tons, and had a speed of 31½ knots, while enough fuel could be carried for a run of nearly 3000 miles at economical speed. The armament consisted of two 4·7-in. and five 12-pr. quick-firing guns, and four torpedo tubes. These two vessels, the *Umikaze* and *Yamakaze*, are more properly described as flotilla leaders, and but for the fact that they were antedated by H.M.S. *Swift*, the Japanese Navy

might have claimed the distinction of originating a type which was widely adopted and developed in the course of the Great War.

When Japan declared war on Germany special credits for the expansion of the Navy were voted by the Diet. This enabled the Government to augment the destroyer flotilla, which had been sorely neglected in the previous five years. Ten second-class boats, known as the *Kaba* class, were therefore ordered and put in hand for completion at the earliest possible moment. As a matter of fact, they were all delivered in less than eight months from the laying of the keels, and the majority of them afterwards served as convoy guards and U-boat hunters in the Mediterranean, where they did excellent work. They displace 665 tons, with a speed of 30 knots, and, having the large fuel capacity of 230 tons of coal and oil, they have a wider steaming radius than is usual in boats of this tonnage. The armament of one 4·7-in. and four 12-pr. guns, which they now carry, may be altered to two 4·7-in. and one 12-pr. anti-aircraft gun. There are four tubes for the 18-in. torpedo. The 1915 programme legislated for eight destroyers, four of which were first-class and the remainder second-class boats. The first quartette, *Amatsukaze*, *Isokaze*, *Hamakaze*, and *Tokitsukaze*, were the largest destroyers which had been built up to then for the Japanese Navy. They displace 1227 tons and have a speed of 34 knots. With 350 tons of fuel on board they can steam nearly 4000 miles at economical speed. The armament is remarkably powerful, comprising four 4·7-in. quick-firers, several machine-guns, and six torpedo tubes. The four second-class boats were of 835 tons and 31½ knots speed, armed with three 4·7-in. quick-

firers. In the following year only two destroyers were authorised, viz. *Tanikaze* and *Kawakaze*, but they were exceptionally large vessels, displacing 1300 tons. The speed remained at 34 knots, and the gun armament was reduced to three 4·7-in. guns, but this apparent decrease in fighting power was balanced by the substitution of 21-in. torpedoes for the 18-in. type carried by all previous Japanese destroyers. Six tubes for the new torpedo were mounted in each vessel.

The 21-in. torpedo first supplied to the *Tanikaze* class is of Japanese design and manufacture. Although modelled on the Whitehead prototype, it is said to embody important improvements and to have a range of 10,000 yards. As early as 1910 experiments were made with a Japanese torpedo of 23½-in. diameter, fitted with a petrol motor in place of the ordinary compressed air engines. This, however, does not appear to have been a success, for no more was heard of it. Torpedoes of the 21-in. and 18-in. models are now produced at the Kure Arsenal, the Muroran Steel Works, the Osaka Iron Works, and, possibly, at one or two of the larger private establishments which executed heavy contracts for naval material during the war. The total output in 1918 was 320 torpedoes, but there is good authority for the statement that at least twice this number could now be manufactured every year.[1] In common with other progressive Naval Powers, Japan is continually experimenting with a view to improving the torpedo, and it is quite possible that her latest product is a far more formidable weapon than the 21-in. torpedo introduced in 1916.

[1] During 1920 the Kobe Iron Works alone manufactured 250 torpedoes.

The programme for 1917 included two large and six second-class destroyers. The *Minekaze* and *Sawakaze* were slightly enlarged copies of the *Tanikaze* class, the displacement being increased to 1345 tons and the gun armament to four 4·7-in. The six smaller boats were duplicates of the *Momo* class, built in 1915. Thirteen further boats—five first-class, eight second-class—were authorised in 1918. The large boats were identical with the *Minekaze* class, of 1345 tons; but the eight smaller destroyers were of 850 tons, steaming at 32 knots, and armed with three 4·7-in. guns and four 21-in. torpedo tubes. One boat of this class, the *Tsuga*, attained a speed slightly above 34 knots on trial. The programmes of 1919 and 1920 made provision for a total of eight first-class and thirteen second-class destroyers. Such details as have been obtained show the eight first-class vessels to be exceedingly powerful. They are named *Akikaze*, *Yukaze*, *Hokaze*, *Shiokaze*, *Tachikaze*, *Namikaze*, *Numakaze*, and *Nokaze*. Displacing 1900 to 2200 tons, they are 350 ft. in length, and have geared turbines of 50,000 horse-power to endow them with a speed of 36 knots. The fuel capacity is expected to suffice for a run of 3500 sea miles at economical speed. Four 5·5-in. 82-pounder quick-firing guns and six torpedo tubes will constitute the armament. Of the forty new destroyers to be built under the 1920-28 programme—more than half of which had been ordered by the end of 1920—it is anticipated that fifteen will be of the first-class and the remainder of the second-class. According to Japanese Press reports, the former will be 'torpedo cruisers' rather than destroyers, and may displace as much as 2400 tons. Capable of making 37 knots at full speed,

they will have a steaming radius of 4000 sea miles and be armed with five 5·5-in. guns and eight torpedo tubes. One journal states, however, that the armament has been modified to six 4·7-in. guns.

With the completion of all the vessels building or authorised to be built, the Japanese torpedo flotilla will consist of thirty-seven first-class destroyers, from 1150 to 2400 tons, with speeds ranging from 32 to 37 knots; and sixty-nine second-class destroyers, from 605 to 950 tons, and speeds ranging from 30 to 36 knots. All these vessels carry as their armament one or more guns of 4·7-in. calibre, which discharges a projectile of 45 lb. weight, as compared with the 4-in. 33-pr. which forms the armament of American destroyers. All Japanese destroyers, without exception, are very strongly constructed, and are designed to keep the sea in the heaviest weather. They are handled with great skill, both in the deck and engineering departments, and in spite of the dangerous waters in which they are continually exercising accidents are as rare as machinery breakdowns. Both in organisation and methods of training the Japanese destroyer service is closely modelled on the German pattern, the efficiency of which has never been questioned. Night manœuvres with masked lights are of frequent occurrence. During the Fleet manœuvres of 1919, in which twenty-four modern destroyers took part, they scored many successes, and their work was the subject of special commendation from the umpires. The Japanese destroyers which formed part of the Allied Fleet in the Mediterranean during the last two years of the war invariably carried out their duties with a seamanlike smartness that earned them high praise from foreign observers, including

Admiral Sir Somerset Gough-Calthorpe, under whose orders they were placed. At the close of the war the destroyer service was organised on a new basis, a full flotilla consisting of two first-class and ten second-class boats. The officer in charge of each flotilla is of captain's rank. He is nearly always a torpedo specialist, while the second-in-command of the flotilla is a Commander who has specialised in navigation. As in other vessels of the Japanese Navy, the destroyers carry very large complements. In the manœuvres of 1919 the *Amatsukaze*, of 1227 tons, which led one of the flotillas, had a complement of 200 on board, including nine commissioned officers; while second-class boats, of 835 tons, averaged 140 officers and men. Since the beginning of 1920 a system of director fire control has been adopted for the armament of all destroyers. Great attention is paid in the flotillas to gunnery, but torpedo work is not neglected. Every destroyer of the first and second class carries an artificer who has undergone a special course of training in the maintenance and adjustment of torpedoes, and passed a very severe examination in this work. He is officially rated as 'Torpedo Adjusting Artificer,' and draws special pay.

As long ago as 1909 a Japanese writer had this to say of the submarine branch of the Imperial Navy: 'It is commonly reported that there are nine submarines in the Japanese service, but in a very short time ordinary torpedo-boats will be superseded by submarines designed and built in Japan. The construction of submarines is a most secret section of the Japanese Navy. The type of vessel itself is recondite. Why should not the service be recondite? At a critical hour it will be

strange indeed if the authorities find themselves unable to utilise some thirty-two submarine boats simultaneously.' [1] In March 1919 the Tokyo journal *Jiji Shimpo* wrote on the same subject as follows: 'We notice statements in America to the effect that the Japanese Navy is deficient in submarines, that the boats it possesses are inferior to foreign types, and that Japanese naval officers have had little or no experience in the manipulation of the submarine arm on modern principles. Such statements are entirely misleading, not to say false. The Imperial Navy Department does not encourage the advertisement of its technical successes, and it particularly observes reticence in regard to the submarine branch. This, however, does not mean that the Japanese Navy is behindhand with submarine preparations. On the contrary, it was one of the first to realise and exploit the war possibilities of under-water vessels, and for nearly fifteen years it has been strengthening the submarine branch, both in quantity and quality, so far as financial resources have permitted. Our submarine fleet at the present time is still growing, and will be much larger a few years from now; but it has already reached a level of efficiency which affords great satisfaction to the initiated, who would not have the least difficulty in refuting these American assertions if they felt so disposed.'

It is quite true, as the Tokyo journal states, that Japan was early in the field with submarines. In 1902 a Japanese naval mission visited the United States, France, and England to study submarine progress in those countries, and twelve months later, on the eve of war with Russia, money was

[1] Satori Kato: *Navy League Annual*, 1909.

voted for the construction in America of five boats of the 'Holland' type, which the mission had reported as being the most suitable for Japanese requirements. These vessels were built by the Fore River Shipbuilding Company, at Quincy, near Boston, the contract stipulating that the utmost secrecy should be preserved. Several Japanese officers remained at the yard while the boats were under construction, and accompanied them when they were loaded, in sections, on special railway trucks and railed to Seattle, whence they were brought by steamer to Yokohama, arriving there on the 12th December 1904. For some unknown reason the work of reassembling the boats and fitting them out for sea was so retarded that the first was not ready for service until June 1905, by which date Russian sea-power in the Far East had been utterly shattered. Consequently it was too late to try the boats in actual warfare, but all five made a very successful *début* at the naval review, held at the close of 1905 to celebrate the signing of peace.

These early submarines are still on the active list, though they are now used only for instructional purposes. Their displacement on the surface is 105 tons, and when submerged 130 tons. The length over all is $58\frac{3}{4}$ ft., the maximun depth $11\frac{3}{4}$ ft., and a petrol engine, driving a single screw, gives a speed on the surface of 9 knots. They differ from contemporary 'Holland' boats by the remarkable strength of the hull, a feature which, for reasons that will appear in due course, has been perpetuated in all later Japanese submarines. Steel of the highest quality was used in their construction, the hull being reinforced amidships by

a broad strip of bronze plate. Two bilge keels, 24½ ft. long by 9 in. wide, were fitted to the hull, which was designed to withstand the pressure that would be experienced at a depth of 125 ft. below the surface. The armament consisted of the bow torpedo tube, and three torpedoes, including one in the tube, were carried by each boat, the crew of which numbered thirteen. Two 'modified Hollands,' Nos. 6 and 7, were built at Kobe in 1906-7. They were much smaller than the original type, displacing only 62 tons on the surface and 86½ tons when submerged, but they were similar in respect of speed, armament, and size of crew. Notwithstanding their diminutive size and the fact that several unconventional features were incorporated in them at the request of the Imperial Navy Department, these two boats turned out to be quite successful. Under the command of Lieutenant Saito, No. 6 distinguished herself in the manœuvres of 1911 by torpedoing the battleship *Kashima* in the midst of the Fleet. For the next few years the development of the Japanese submarines ran practically parallel with that of the British type. Nos. 8 and 9, built at Barrow in 1908 by Messrs. Vickers, were identical in all main features with the British 'C' class. Their dimensions were: length, 135 ft.; breadth, 13½ ft.; displacement above water, 280 tons, below water, 320 tons. Petrol engines, operating twin screws, gave a surface speed of 13 knots. When running submerged on the electro-motor a speed of 7 knots was attained. Two tubes were mounted and four torpedoes carried. Two periscopes are fitted, one for the captain and the other for a look-out man. Submarines Nos. 10 to 13 were the first boats to be completely built in Japan,

though their design was the joint work of Messrs. Vickers and the Japanese Construction Department, and certain items of material and equipment were imported from England. They differ in no important respect from boats Nos. 8 and 9, and may be regarded as slight improvements on the British 'C' class. No. 12 had a purely Japanese arrangement of torpedo tubes, which did not give good results, and was therefore replaced in 1913. The last two boats of this type were Nos. 16 and 17, built at Kure in 1916. Except that they had four bow tubes and slightly more speed, they were repetitions of Nos. 8 and 9 built eight years previously. The fact that Japan should have adhered to this design for so long testifies to its excellent qualities.

But while these small boats were quite satisfactory for the purpose of coast defence, Japan was anxious to evolve a sea-going type, capable of cruising far from its base and having a radius of at least 2000 miles. Two such boats, Nos. 14 and 15, were ordered in France in 1912, to the designs of M. Laubeuf, and built at Châlon-sur-Sâone. The type has a length of 185 ft. and surface displacement of 457 tons, which increases to 665 tons when the vessel is submerged. Propulsion on the surface is by Diesel motors, giving a speed of 17 knots, while below water a rate of 10 knots can be maintained. Six 18-in. torpedo tubes are mounted, two being placed in the bows and four built into the superstructure. The contract called for a cruising radius of at least 2200 miles in surface trim, but it is probable that the boats could travel a much greater distance than this on one filling of fuel. As only one of these boats, No. 15, had been com-

pleted on the outbreak of the Great War, the second one, No. 14, was relinquished to France and incorporated in her Navy. A substitute for the missing boat was laid down at Kure in 1916, but of a larger type, which will be described later. The first ocean-going submarines to be built in Japan were Nos. 18 and 21, the design of which emanated from Italy. They are 195 ft. in length and when submerged displace 980 tons. Four 18-in. torpedo tubes are fitted, one of which is at the stern. The designed speed of these boats was 17½ knots, but it has never been actually reached, owing, no doubt, to the large amount of extra weight worked into the hull by the Japanese builders, who considered the original scantlings too light. The cruising radius of No. 18 is approximately 3000 sea miles.

All the foregoing submarines were modified copies of standard British, French, or Italian designs. In 1916, however, the Japanese Navy Department produced a design of its own, which is claimed to present certain valuable features not found in previous boats. With the exception of the first five diminutive 'Hollands,' the submarines planned to Japanese order by foreign builders are said to be lacking in the extraordinary strength of hull which is regarded as an indispensable feature of submarines operating in the waters adjacent to Japan. The average depth is so great that submarines can rarely lie on the bottom. Moreover, it has been found by experience that submarine navigation in those waters presents dangers and difficulties not encountered in the sea areas of Europe. Apart from the enormous depth of water and the rocky nature of the sea bed, a submarine is liable to meet with powerful and erratic currents

which tend both to drive it out of its course and produce sudden changes in trim. In order to counteract this danger it is necessary that the internal mechanism of the boats should lend itself to instant and perfect control, especially in regard to the hydroplanes and the pumping system; and, above all, that the hull should be sufficiently robust to withstand the hydrostatic pressure to which it would be subjected in the event of an involuntary descent below the nominal safety limit. To obtain these qualities in their submarines the Japanese constructors are willing to sacrifice high surface speed, though in their latest types they have contrived to embody this desideratum as well. Thanks to the special form and extra stiffening of the hull structure, the modern Japanese submarine is probably the most strongly-built vessel of its type in the world. The Imperial Navy claims to have broken all records for deep diving, and, at the same time, to have suffered fewer fatal accidents with its submarines than any other navy.

This does not mean that Japanese submarines are handled with unusual caution, or that they never meet with accidents; quite the contrary. But their stout construction often brings them safely through groundings, collisions, and other misadventures which in all likelihood would prove disastrous to vessels less strongly built. One disadvantage of the Japanese system of building submarines is that the abnormal amount of bulkheading and subdivision in them makes the boats very cramped and uncomfortable, in which respect they are inferior to most foreign designs. This drawback is intensified by the large complement borne in each boat. But in the Japanese Navy no great

premium is placed upon personal comfort, and the submarine service, with all its hardships, is exceedingly popular. It is doubtful whether a European or American crew could remain at sea in a small submarine such as the Japanese No. 16 for more than ten days or a fortnight without being reduced to the point of physical and mental exhaustion. Yet this same vessel made during 1919 a cruise lasting three weeks, touching at only three ports, and then for the space of a few hours only. As a general rule the actual cruising radius of a submarine is considerably less than its fuel endurance by reason of the mental and physical strain which prolonged voyages in this type of craft impose on the human element. Thus, the large German submersibles of the *Deutschland* and U-cruiser classes were never able to remain at sea for anything like the full limit of their fuel and provision capacity, and on returning to port their officers and men were invariably worn out. Japanese seamen, on the other hand, appear to be less affected by the confinement and rigours of submarine service, notwithstanding that the habitability of their boats leaves much to be desired. Without attempting to give precise figures, it would probably be safe to assume that of two submarines of identical design, tonnage, and fuel capacity, one manned by Japanese and the other by Westerners, the former could remain at sea thirty per cent. longer than the other boat.

Submarine No. 19, the first representative of the new sea-going type of purely Japanese design, was begun at Kure towards the end of 1916 and completed nearly three years later. The length over all is 192 ft., the extreme breadth 24½ ft., and the displacement when submerged is 890 tons. A

surface speed of 16 knots had been anticipated, but the maximum speed on trial, with the boat in light condition, was barely 15½ knots. The oil supply of 75 tons is sufficient for a continuous voyage of 6500 sea miles at economical speed. The number of torpedo tubes is not definitely known, but there are said to be three in the bow and two at the stern. When first commissioned, No. 19 carried a 12-pounder quick-firing gun. She is now believed to mount two of these weapons. Submarines Nos. 14 and 20—the former built in place of the boat ceded to France—are exact copies of No. 19, save that their speed is higher by the fraction of a knot. Nos. 22, 23, and 24 are developments of the same type, with the displacement increased to 950 tons, the length to 196 ft., and the breadth to 25 ft. No change has been made in the speed or armament. The next two boats, Nos. 25 and 26, are variously reported to be of 950 and 1000 tons displacement and 16½ knots speed, with an armament of four tubes and one 4·7-in. gun of short calibre. Their cruising radius is at least 7500 miles. Sixteen further sea-going submarines were laid down in the two years ending December 1920. According to reliable information they displace 1100 tons below water, are 240 ft. in length, and have a speed of 17 knots on the surface and 9½ knots when submerged. There are four torpedo tubes in the bows and, possibly, one on each beam. The maximum supply of 90 tons of oil gives them a cruising endurance of 11,000 miles. The last of this group of sixteen boats will not be in service before the end of 1921.

Eight new submarines—four sea-going and four coastal boats—covered by the naval programme of

1919, were to have been commenced in the following year, but before they were laid down an event had occurred which is believed to have brought about an important modification in Japanese ideas on submarine design. This event was the arrival at Yokosuka on the 20th June 1919, of seven ex-German submarines, which had been allotted to Japan for experimental and propaganda purposes, by the Inter-Allied Naval Council in Paris. These seven vessels had previously been closely examined by Japanese experts in Europe, and were, indeed, selected by them as representing the most useful types from the Japanese point of view. They comprised one large minelayer, two medium and two small ocean-going boats, and two small minelayers. The large minelayer, submarine O-1, completed during 1918 as the German U-125, has a surface displacement of 1163 tons, is 267½ ft. in length, and can travel on the surface at a speed of nearly 15 knots. With all tanks filled the oil supply is 189 tons, which would enable the vessel to cover a distance of no less than 11,500 sea miles. A 5·9-in. 101-pounder quick-firing gun is mounted on the deck, and there are four bow tubes for discharging torpedoes, 24 of which can be stowed in the boat. The minelaying equipment consists of a magazine—containing 42 mines—at the after end of the boat, and two horizontal chutes through which the mines are projected into the water. The formidable qualities of this vessel are self-evident. She could cruise half-way round the globe without replenishing her fuel supply; she carries a heavy long-range gun which would enable her to attack any armed merchant ship, or even a small man-of-war, with good prospects of success; she

has a powerful torpedo battery; and, finally, she carries enough mines to lay a large field of these deadly engines off a hostile port. It is not surprising, therefore, that the Japanese experts should consider this to be an ideal type of submarine for their own Navy. They are now reported to have evolved a slightly larger vessel, based in all essential features on the U-125, but having a displacement of 1250 to 1400 tons and a speed of 16 knots. The armament is given as one 5·5-in. and one 12-pr. gun, four torpedo tubes, and 50 mines. Two submarines of this type were ordered in October 1920, and four similar boats are to be built in 1921. Since there is reason to believe that Japanese editions of the other ex-German submarines have been designed, the following details of these vessels will be of interest.

Submarine O-3: displacement, 715 tons; length, 212 ft.; speeds, 17 knots on surface, 9½ knots submerged; cruising radius, 9500 sea miles; armament, one 4·1-in. and one 3·4-in. quick-firing guns, two bow and two stern torpedo tubes.

Submarine O-2: displacement, 725 tons; length, 213 ft.; speeds, 15½ knots on surface, 9¾ knots submerged; cruising radius, 11,250 sea miles; armament, one 4·1-in. quick-firing gun, four bow and two stern torpedo tubes.

Submarines O-6 and O-7: displacement, 516 tons; length, 181 ft.; speeds, 14 knots on surface, 8 knots submerged; cruising radius, 9000 sea miles; armament, one 4·1-in. quick-firing gun, four bow and one stern torpedo tubes.

Minelaying submarines O-4 and O-5: displacement, 491 tons; length, 184½ ft.; speeds, 11½ knots on surface, 6½ knots submerged; cruising radius, 9850

sea miles; armament, one 4·1-in. quick-firing gun, two bow and one stern torpedo tubes.

Of submarine No. 55, which has been described as 'an improved type of cruiser submersible,' the following details are to hand:

Displacement, 2300 tons; length over all, 330 ft.; greatest breadth, 34 ft.; speeds, 17 knots on surface, $8\frac{1}{2}$ to 9 knots submerged; cruising radius, 16,000 miles at an economical speed of 7 knots.

Armament: two 5·5-in. or 6-in. quick-firing guns, four bow and two stern torpedo tubes. The conning-tower and upper deck are to be plated with armour. Each of these vessels will carry a complement of not less than 100 officers and men.

The future submarine policy of Japan will be directed towards the creation of two distinct types: (1) very large ocean-going cruisers, of good speed, armed with two or more heavy quick-firing guns and at least six torpedo tubes. A certain proportion of these vessels will be minelayers. (2) Smaller ocean-going vessels, averaging 1000 tons in displacement, of moderate speed, armed with two medium quick-firing guns and four or more torpedo tubes. In this case, also, a fair proportion will be equipped for minelaying duties. The purely coastal type will not be perpetuated, for experience has shown that it is false economy to construct diminutive submarines when the addition of a couple of hundred tons in displacement endows a boat with good sea-going qualities and a far higher degree of all-round fighting value. That Japan will slavishly follow the German model in any of these types is not to be expected. It has been made clear that her constructors have original ideas on the subject, and that they have already succeeded in evolving a particular

type of submarine which conforms to the special requirements of Japanese naval strategy. At a very conservative estimate, the present establishment numbers 107 submarines of all types, built, building, or on order. Of this total, all but fifteen are ocean-going boats, and the large majority, having been designed since the war, may be regarded as incorporating the features which war experience has shown to be most desirable. It is the reputed intention of the present Minister of Marine, Admiral Kato, to secure legislative authority for enlarging the submarine fleet to 150 units, this total to be achieved not later than 1925. It is doubtful, however, whether Japan is either financially or technically in a position to execute a programme of such dimensions within the period stated. Owing to the large increase in dimensions, submarines can no longer be produced in shoals at short notice. Even Germany found it impossible to build boats of medium size in less than twenty months, while the larger types took from two to three years to complete. Nor is it by any means certain that Japanese industry is capable of manufacturing in large quantities the propelling machinery, internal-combustion and electric, of submarines. As noted in a previous chapter, submarine oil engines are built at the Government dockyards of Kure and Sasebo and by five private firms, yet in 1919 the annual output was limited to twelve complete sets, only four of which were powerful enough to be fitted in large ocean-going boats.[1] Several writers in the Japanese Press have lately urged the Government to revise its naval policy by curtailing the number of capital

[1] Orders for several sets of engines for Japanese submarines were placed with a British firm in 1920.

ships and devoting the funds and shipbuilding resources thus made available to the more rapid development of the submarine fleet. But the naval authorities do not favour this course. They believe, with the British Admiralty and the American Navy Department, that the capital ship is the first and most important element of sea-power. Admiral Kato, speaking in the Diet on the 21st December 1919, said: 'The more we study the lessons of the war, the stronger does our conviction grow that the last word in naval warfare rests with the big ship and the big gun.' This conviction, however, has not prevented Admiral Kato from strengthening the submarine arm to the full extent of his power.

The Japanese submarine service is manned entirely on a voluntary basis. The conditions of entry for officers and ratings are much the same as in the British Navy. The officer in command of the service, a Rear-Admiral, has his headquarters at Kure, where a large submarine station, with barracks to accommodate 6000 men, is in course of erection. There are secondary bases for the under-water fleet at Yokosuka, Sasebo, and Tokuyama Bay, and it is intended also to establish submarine depots at Ominato, situated in Awomori Bay on the south side of Tsugaru Straits; and at Takeshiki, in the Korean Straits.

Until very recently Japan had done little to develop aviation, either for civilian or military purposes, and although substantial progress has been made in the last two years, she does not yet possess a degree of air-power commensurate with the dimensions of her naval and military forces. This is the more surprising inasmuch as the Japanese have many of the attributes which make for good airman-

ship. At the close of 1919 a wealthy American, who desired to remain anonymous, sent a remittance of £18,000 to the Japanese Government, with the request that it be devoted to the purchase of flying machines and the training of pilots, adding that, in his opinion, the Japanese had qualities which ought to make them the finest aviators in the world. This story, which was given great prominence in the newspapers, appears to be authentic; but the fact remains that only since the end of the Great War has the Japanese flying service begun to expand on a really large scale. The backward state of aviation is ascribed to the discouraging experience of pre-war years, when the machines purchased abroad for training purposes turned out to be unreliable and dangerous, and led to so many fatal accidents that practically all the pioneer flying men were killed off. The Army Flying Corps did not come into existence till 1915, and remained for some time a mere branch of the Engineer Corps, but was later reorganised on an independent footing. The first large vote on behalf of military aviation was made in 1916, when a sum of £60,000 was appropriated by the Diet. In 1918 this body voted a further sum of £154,000, and in the same year the number of Army flying squadrons was increased to six. From 1910 to 1920, inclusive, a total of £2,500,000 was appropriated for naval and military aviation. During 1918 Admiral Kato, the Minister of Marine, succeeded in passing a Bill for the expansion of the Naval Air Service. It contained provision for 140 new machines, all of which were to be completed by 1923. In this year Mr. K. Yamashita, a well-known shipowner, donated the sum of £100,000 for the purchase of flying material from the United States and Europe.

The first Japanese aviators were trained in France and Germany during 1909. Shortly after their return home the Government laid out an aerodrome at Tokorozawa, in the Saitama Prefecture. Large orders for material were then placed in France, Germany, and England, but the outbreak of war prevented the delivery of all but a few machines. Japan was thus thrown back on her own resources, a circumstance which eventually proved more of an advantage than otherwise by stimulating the domestic production of planes and engines. By 1918 a number of fairly successful types for Army and Navy use had been evolved. Shortly after the close of the war a French air mission, consisting of several well-known military airmen, arrived in Japan to reorganise the military air service. They found the Japanese officers apt and eager pupils, while the Government did everything possible to facilitate the work of the mission. The Naval Flying Corps was established in 1912, with headquarters at Oppama, near Yokosuka. Other naval aerodromes have since been built, including one at Kasumigaura, which, when finished, will be the largest flying ground in Japan. An aeronautical laboratory, primarily for naval use, was opened in 1918 at Tsukiji, near Tokyo. The bulk of the Navy's machines and motors are built at the Kure and Yokosuka dockyards, the latter yard specialising in the design of heavy flying-boats, bombing machines, and torpedo planes. Experimental work goes on continuously with native and foreign designs of every description. The material purchased abroad in 1920 is said to have included complete machines by Vickers, Short, Curtis, De Haviland, and Sopwith, together with

Rolls-Royce, Hispano-Suiza, and American 'Liberty' engines.

Naval aviators receive their preliminary training on 90 horse-power biplanes, passing for more advanced instruction to the fast Farman, Short, and Kaigunshiki scouts, the latter a very successful native production. The heaviest bombing machine used by the Navy is a flying boat of 790 H.P. The 1920 type of torpedo plane, built at Yokosuka, has a total weight of 7200 lb., and a useful load of 1750 lb. It carries a special short torpedo with a maximum range of 2000 yards. Large numbers of these machines have been ordered. A few warships have been fitted with aeroplane launching platforms to take small scouting biplanes. These machines have a span of 24 ft., an overall length of 19½ ft., and weigh 1225 lb., with a useful load of 225 lb. They have a speed of 125 miles an hour, and are very swift climbers. The only aircraft carrier at present in service is the *Wakamiya*, an old naval transport incapable of steaming more than 9 knots. She will soon be replaced by a new vessel, specially designed for this purpose, and other ships of the same type are to be built under the current programme. The policy of the Navy Department is to have two fast aircraft carriers attached to the Battle Fleet by 1924, one carrying a flight of torpedo planes, while the other will be equipped with machines for scouting and artillery observation. Besides the aerodromes at Oppama and Kasumigaura, other naval aviation stations exist at Kure, Sasebo, in Ise, and at Oihama. New aerodromes for naval use are to be built at Chinkai (Korea), at Tsuhima Island, and at Formosa. Up to the present no large airship has been

built in Japan, nor have any vessels of this type been imported from abroad, though funds were appropriated in 1919 for one medium airship on the Zeppelin principle.[1] The Navy, however, possesses from ten to fifteen small non-rigid airships, or 'Blimps,' which are used as anti-submarine scouts and for gunnery control work. These are of a standard type, 170 ft. long, with a speed of 27 knots and a cruising endurance of seventeen hours.

The Naval Flying Corps in December 1920 included 270 officer pilots and 160 officers under training. The corps, which is commanded by Rear-Admiral S. Yamanouchi, has its headquarters at Oppama, near Yokosuka, and consists of three squadrons. The First Squadron is based at Oppama, the Second Squadron at Kure, and the Third Squadron is attached to the active Battle Fleet. The Army Flying Corps had in 1920 a total of 620 pilots, of whom 250 were not fully qualified. It controlled nine aerodromes, several of which, being situated on or near the coast, would be available for naval purposes if required. The two largest aircraft factories are the Government establishments at Kure and Yokosuka; but three private firms, the Mitsu Bishi Co., the Kawasaki Co., and the Akabane Co., have recently taken up the manufacture of aeroplanes and engines on a large scale. At least six other firms now build aeroplanes for the Government, but without supplying the motors for them. It does not appear that the Japanese have succeeded as yet in producing aircraft engines equal to the best foreign designs.

[1] The contract for this airship has since been placed with Vickers, Ltd. It will be of the 'Scout' type.

The naval manœuvres of September 1919 were the first in which aircraft took part in considerable numbers. In the course of these operations air raids were delivered against the coast, and the Battle Fleet was subjected to attack by torpedo planes, while airships and aeroplanes co-operated with the Fleet as scouts and artillery observers. In contrast to the indifference displayed in earlier years, both Government and people are now showing the keenest interest in aviation. Civilian flying, which was practically unknown in 1918, is making such remarkable strides that ten aerodromes are now in operation by private companies, and the three aviation societies—as distinct from the Army and Navy associations—have a total membership in excess of 14,000. It is probable, therefore, that Japan at no distant date will take rank among the leading Air Powers of the world. The prevalence of very high winds, the sudden atmospheric variations due to the peculiar topography of the country, and the typhoons which usually occur nine or ten times each year all contribute to make flying difficult and hazardous in Japan, and none but the most experienced airmen are equal to such trying conditions.

CHAPTER IX

STRATEGY IN THE PACIFIC

That the rapid growth of Japanese naval power was the chief reason that impelled the United States Government in 1919 to transfer the strongest half of its Fleet to the Pacific is a fact which admits of no dispute. Such a division of the naval forces had long been in contemplation. It had formed the subject of repeated representations from the communities on the Pacific Coast, who dreaded what might happen to them, in the event of war with Japan, before their own Fleet could make the long and painful passage from the Atlantic Ocean *via* the Magellan Straits. Nevertheless, in spite of strong pressure from California and the other Pacific States, the naval authorities wisely refused to divide the Fleet until two conditions had been fulfilled: first, the opening of the Panama Canal; and, secondly, the completion of sufficient ships to make possible the formation of two distinct and well-balanced squadrons, each strong enough to hold its own against any prospective enemy pending the arrival of reinforcements. Both postulates had been met by the middle of 1919, owing to the large increase in the number of destroyers built under the emergency war programmes and the commissioning of several new battleships. In his report for that year the Naval Secretary dealt at some length with the principles which had

governed the new distribution of the Fleet. The organisation, he explained, had been so carefully thought out that when, at stated periods, the two Fleets are combined, not a single additional order will be necessary for all units of both divisions to act in concert. Arrangements had been made for a unified command to take effect in certain contingencies. Each Fleet would be at all times within easy supporting distance of the other, and a junction could be effected before any enemy could deliver an attack in force against either coast. 'By this means,' he added, 'the Navy not only protects each of our long coastlines, but places a wall of steel round our ocean boundaries, and gives us a sense of security such as we have never before enjoyed.' The tactical problems that would arise when the two Fleets combined had all been anticipated and provision made to deal with them. Vessels of every type—battleships, cruisers, scouts, destroyers, submarines, fuel ships, and auxiliaries —had been assigned in equal numbers of divisional units to each Fleet, thus obviating confusion and doing away with the necessity for reorganisation whenever the two Fleets come together.

Difficult as it may seem to reconcile such a division of force with the root principles of strategy, the circumstances in this case are unusual enough to explain, if not to excuse, the violation of a fundamental law of sea-power. The United States Navy has to guard two very long coastlines, each studded with cities and harbours of great commercial importance. Had the combined Navy been stationed in the Pacific before the opening of the Panama Canal, it could not have arrived in the North Atlantic in time to save New York from attack by

a hostile force from Europe; nor, had it been concentrated in the Atlantic, could it have reached the Pacific in time to protect San Francisco against attack by a hostile fleet from Asia. In the pre-Canal era, therefore, the division of the Fleet into two portions might have been justified on the grounds of expediency, provided always that each portion was not hopelessly inferior in strength to the forces which might be brought to bear against it. But the opening of the great Isthmian waterway produced a radical change in the strategical situation. There is no doubt whatever that the real motive which led the United States to embark upon this colossal enterprise was strategic rather than economic. It was undertaken to promote national safety first and national prosperity second. There were, indeed, other weighty reasons which made it desirable to bring the two seaboards of the Union into closer touch; but first and foremost was the need of rapid intercommunication for purposes of defence. Americans retained a vivid recollection of the anxious days of 1898, when the imminence of war with Spain made it a matter of urgent necessity to concentrate every available fighting ship in the Caribbean Sea. At that time the battleship *Oregon* was lying at San Francisco. She was at once ordered to make for Cuba at her utmost speed, but it took her sixty-eight days of steaming, part of the time under forced draught, to complete the voyage of 14,000 miles *via* the Straits of Magellan. To-day, thanks to the Panama Canal, Cuba can be reached almost as quickly from San Francisco as from Europe. 'The difference in time might mean the difference between victory and defeat, for the *Oregon* was a first-line ship in 1898, and took a leading

part in the naval achievement at Santiago. If the enemy then had been stronger, it could and would have forced battle before the arrival of the *Oregon*; but with the open Isthmian Canal the Atlantic and Pacific Fleets could carry out the plans already formulated as one Fleet before any enemy could try conclusions with us.' [1] By using the Canal the two Fleets could unite in either ocean within a fortnight, assuming that when the order came the Atlantic Fleet was off the New England coast and the Pacific Fleet at San Francisco.

It does not seem to have occurred to those responsible for the new scheme that this very proximity of the two Fleets constitutes a potent argument against their separate existence. Despite all the careful arrangements which have been made to ensure cohesion and co-ordination when they unite and become a single Fleet, the experience of ages has taught us that no armed organisation can attain the highest level of efficiency until it has gone through a long course of training and manœuvring under a single command. This is one drawback to the present scheme, but there are others. From the political point of view the American Navy, when divided, does not possess the significance it would have as a united force. The Pacific Fleet, as now constituted, is inferior in strength to the combined Japanese Navy. It is not difficult to imagine the influence which this fact might exert in Japan if political relations between the two Powers were in a state of tension. Those Japanese spokesmen who favoured a settlement by force of arms might conceivably raise their voices in favour of delivering a sudden blow before the divided American Fleet had time

[1] Secretary of the Navy: Annual Report, 1919.

to coalesce. They might even urge the possibility of blocking the Panama Canal immediately before or after the formal declaration of war, thus delaying for five or six weeks the arrival of American reinforcements from the Atlantic and incidentally throwing the entire American plan of campaign into utter confusion. No such encouragement to precipitate action would exist were the United States naval forces to be kept together as a single Fleet of overwhelming strength, cruising alternately in both oceans. The moral effect of such a formidable concentration of power might prove an antidote to incipient war fever across the Pacific. Be that as it may, the division of the Navy is now an accomplished fact.

Since the whole American scheme of naval strategy now pivots on the Panama Canal, the safety of that waterway in all circumstances may be described as the condition precedent to successful operations, whether offensive or defensive, against an Asiatic foe. It was the recognition of this truth which caused the United States Government to insist on exercising entire political control over the Canal zone and determined it to lay down heavy fortifications at each end of the Canal—contrary, it may be noted, to the Hay-Pauncefote Treaty. But Great Britain, for reasons which have never been publicly stated, raised no objection to this important modification of the Treaty. As the late Admiral Mahan pointed out, the Clayton-Bulwer Treaty bound the United States to share control of an Isthmian Canal with Great Britain. The two Powers were to guarantee mutually the neutrality of any canal; but the Clayton-Bulwer Treaty subsequently gave place to the Hay-Pauncefote agreement, which left the

construction of the Canal and the guarantee of its neutrality to the United States alone. Work on the Canal began on the 4th May 1904, and on the 15th August 1914 the completed waterway was opened to the passage of vessels not requiring more than 30 ft. of water. The total length of the Canal from deep water in the Atlantic to deep water in the Pacific is 50 miles; the length on land is 41½ miles. In making the passage from the Atlantic to the Pacific a vessel first enters a channel in Limon Bay, follows this for a distance of 7 miles to Gatun, and there, entering a series of locks in three flights, is raised 85 ft. to the level of Gatun Lake. Through this lake the vessel can steam at full ocean speed, keeping to a channel which varies from 1000 to 500 ft. in width. On reaching Bas Obispo, 24 miles from Gatun, it passes into the Gaillard Cut, and steams through this defile for 9 miles to Pedro Miguel. There it enters a lock, and is lowered 30⅓ ft. to a small lake at an elevation of 54⅔ ft. above sea level. Traversing this lake for about 1½ miles to Miraflores, it enters two locks in series and is lowered to sea level, passing out into the Pacific through a channel about 8¼ miles in length, with a bottom width of 500 ft. The depth of the approach channel on the Atlantic side, where the tidal variation does not exceed 1½ ft., is 41 ft. at mean tide; and on the Pacific side, where the maximum variation is 23 ft., the depth is 45 ft. at mean tide.[1] The cost of building the Canal was £75,000,000 in round figures. This does not include the fortifications, on which, up to the present, a total sum of £7,382,000 has been expended.

The defences of the Canal fall under three head-

[1] *U.S. Navy Year-Book*, 1917-1918.

ings: first, the building of heavy sea batteries at each ocean terminus; the second, the construction of field works in the vicinity of the locks, these works to be occupied by a mobile force of troops with a minimum strength of 7000 men; third, the maintenance of submarine flotillas at each terminus. On the Atlantic side the principal sea defences are at Toro Point, on the west side of Colon Bay, whence a breakwater extends into the bay for a distance of two miles; and at Margarita Island, on the eastern side of the bay. The Pacific defences are built on three small islands, Flamenco, Perico, and Naos, situated in the Bay of Panama about three miles from Balboa, and abreast of the Canal entrance. The original plan of fortification, which may have been modified since, provided for a composite armament of heavy long-range naval guns, large calibre mortars, and medium quick-firing guns. The works on Margarita Island were to be armed with two 14-in. and two 6-in. guns; those at Toro Point with two 14-in. guns, two 6-in. guns, and eight heavy mortars; and the battery at Manzanilla Point, city of Colon, with two or more 6-in. quick-firers. On the Pacific side, Flamenco, the outermost of the three islands, mounts a 16-in. naval gun, with a range of 20,000 yards. Perico Island has one 14-in. gun, and Naos Island one 14-in. and two 6-in., besides some 12-in. mortars of a new and powerful type. In addition to these main defences there are landward batteries of 6-in. quick-firers and mortars to protect the forts against attack from the land side, and mobile defence at each terminus of the Canal is provided by flotillas of submarines. Some years ago the General Board of the United States Navy issued a

statement in reply to criticisms which had been passed on the scheme of Canal defence. It expressed full confidence in the adequacy of the fortifications to safeguard the transfer of an American Fleet from one ocean to the other, and explained that the function of the forts in this particular instance was precisely the same as it was at any fortified place from which a fleet might have to issue in the face of an enemy's squadron. Guns mounted on shore are on an unsinkable and steady platform, where they can be provided with unlimited protection and accurate range-finding devices. Guns mounted on board ship are on a sinkable, unsteady platform, their protection is necessarily limited, and methods of range-finding afloat cannot be brought to the same degree of perfection as on shore. The shore gun of equal power has therefore a great advantage over the gun mounted on shipboard, an advantage which is increased if the former be mounted on disappearing carriages, as are the sea-coast guns of the United States. The mere statement of these elementary facts is a sufficient proof of the value of coastal batteries to assist a fleet in passing out from behind them to engage an enemy fleet outside, provided the shore guns are mounted in advance or abreast of the point at which the ship channel debouches into the open sea. Even if somewhat retired from that point they would still be useful, but to a less extent. At the Pacific terminus of the Canal there are outlying islands that afford ideal sites for fortifications, the usefulness of which in covering the egress of a fleet in the face of opposition is self-evident. As for the defences at the Atlantic terminus, the General Board stated that the conditions there

were unusually favourable for the mounting of guns designed to cover the deployment of the Fleet.

'On both sides of Limon Bay, in which the Canal terminates at the Atlantic end, there are excellent sites for forts, well advanced on outlying points. The line joining these sites is 3000 yards in front of the point where the Canal prism reaches a low water depth sufficient for battleships, and Limon Bay from this point outward is wide enough for a formation of eight ships abreast. The outer end of the most advanced breakwater is only 600 yards in front of the line joining the sites for the forts; and as long as ships remain behind the breakwater it will afford them a considerable amount of protection from the enemy's fire, while they will themselves be able to fire over it. In order to make his fire effective the enemy must come within effective range of the guns in the batteries.'

Some very interesting data relating to the defences at the Pacific end were given by General Weaver, U.S. Army, in the course of his testimony before the Sub-Committee on Appropriations for the defence of the Canal. In his opinion the defences there are wholly adequate. It was suggested to him that an enemy might mount guns on Taboga Island, and thus, with the assistance of fire from the ships, control the water area in front of the Pacific terminus. General Weaver explained, however, that the new type of mortars that were being provided for the fortifications at Panama would have a range of 20,000 yards. Their fire would sweep the island and command the approach for a considerable distance beyond Taboga. In fact,

ships lying 8000 yards to seaward of the island would be exposed to shells from the mortar batteries. Furthermore, the single 16-in. gun mounted on Flamenco would have a range of 20,000 yards, and the 14-in. guns on Perico and Naos ranges of 18,400 yards, while the heavy quick-firers on Naos and on the mainland could shoot to a distance of 6000 yards, and were well placed to repel any attempt at landing on the fortified islands. Nor is reliance placed on guns alone. Apart from mobile defence by submarines, the waters on both sides lend themselves admirably to minelaying. There are no swift currents and the water is not excessively deep. The narrowness of the approaches and the absence of fog make range-finding and artillery plotting simple and accurate. The channels through which a hostile fleet would have to approach, being strictly defined, have been carefully plotted, with the result that an annihilating fire could be brought to bear on the ships before they came within effective bombarding distance. The danger of damage to the locks by sabotage on the part of enemy agents has not been overlooked. Colonel Goethals, under whose supervision the Canal was built, was requested to state his views on this subject. His reply is worth quoting: 'In order to accomplish the destruction of the locks it would be necessary to place the charges very carefully in them. To do that would take time,—and what would our sentries be doing in the interval? One man could not carry a sufficient quantity of explosive to destroy the locks. You would have to deposit the charge behind a gate, and in a certain place behind the gate, in order to disable the Canal; and you must destroy the gates to de-

stroy the Canal. I cannot imagine what the people operating the Canal and the troops having charge of its defence would be doing in the meantime.'

It is said that nine detailed schemes for the invasion of England were submitted to Moltke, the great German strategist. After examining each one carefully, he returned them with the marginal note: 'In theory, all are feasible; in practice, all would be impossible.' The same remark would probably apply to the many schemes which the Japanese naval authorities are popularly supposed to have worked out for the destruction of the Panama Canal locks. In recent years war with the United States has furnished the theme of several highly-coloured stories by Japanese writers, and in nearly every case the imaginary campaign opens with a sudden and devastating raid on the Panama Canal. While this does not necessarily mean that attempts against the Canal, either by secret agents or a naval expedition, would certainly be made in the event of war, it does suggest that the subject has been well considered in Japan. Nor would this be surprising in view of the terrible handicap which even the temporary disablement of the Canal would impose on the American naval command. But although something might be attempted in that direction, the chances are all against successful interference with the Canal. The enormous difficulty of reducing even mediocre land fortifications by naval bombardment was demonstrated on many occasions during the Great War, and British experience at Gallipoli and off the Belgian coast went far to confirm Napoleon's dictum, 'Un canon à terre vaut un vaisseau à la mer.' Japanese strategists, having studied naval

history to good purpose, would not be in the least likely to pit their best ships—and inferior vessels would be worse than useless—against the modern high-velocity guns and heavy mortars which guard the Panama Canal. There is, however, a yet weightier reason for dismissing a Japanese naval attack on Panama from the category of war possibilities. The coast of Japan is some 8000 miles distant from Panama, and it would therefore be physically impossible for a Japanese squadron to attack the Canal unless it had a base near at hand. This factor of distance dominates the whole question of Pacific strategy. As regards the prospects of damage to the Canal locks by secret agents, it goes without saying that special vigilance would be exercised at the first hint of political tension. Moreover, the lock gates are ponderous affairs, which could only be put out of action by a party of blasting experts, equipped with all the necessary tools and a large quantity of explosives, and having plenty of time at their disposal. On the other hand, a temporary block might be created by the scuttling or blowing up of a large ship inside the locks, and no one who knows of the heroism displayed by Japanese sailors in previous wars could doubt their readiness to sacrifice themselves for the attainment of such a vital military advantage. Extreme vigilance on the part of the American authorities may minimise the danger to the Canal in war time, but cannot wholly eliminate it. And apart from enemy action, the possibility of a block occurring through landslides is ever present.

War with Japan in the immediate future would confront the American naval command with a task of extraordinary complexity. They would be faced

with the alternative of waging a purely defensive war, which, by entailing the loss of all their possessions in the Western Pacific, would be tantamount to a confession of defeat; or of fighting under conditions so difficult that a decisive success would be practically impossible to achieve. A glance at a chart of the Pacific Ocean will suffice to corroborate this statement, assuming the student to be conversant with the defenceless condition of the American territories in the Western area of that ocean. When the United States relieved Spain of the Philippines she gave hostages to fortune in a sense which the American people have never fully realised. But for the acquisition of these islands they need never have maintained a powerful fleet in the Pacific or have gone to the expense of constructing great naval bases on the Western Coast. Their possession, however, at once advanced the frontiers of the United States nearly 7000 miles across the Pacific and made her an Asiatic Power, thereby conferring upon her all the cares and responsibilities inseparable from that status. The Philippine Archipelago, which was ceded by Spain to the United States under the treaty of peace concluded in April 1899, extends almost due north and south from Formosa to Borneo and the Moluccas. It embraces about 3100 islands and islets, with a total area of 115,000 square miles. The two largest islands, Luzon and Mindanao, cover between them an area of some 77,000 square miles. The population in 1919 was estimated to be 9,000,000, of whom only about 12,000—excluding troops—were Americans or Europeans. The great majority of the inhabitants are members of the Malayan race. Autonomous government was granted to the islands in 1916.

With the exception of the Governor-General and the Vice-Governor, who are Americans, the heads of Government departments are all Filipinos. In normal times the islands are garrisoned by a force of 5600 regular troops of the United States Army, and from 8000 to 9000 native levies, known as the Philippine Scouts, under American officers. Legislation enacted in 1917 provided for the establishment of a militia in which every able-bodied male citizen of the islands between the ages of 18 and 45 is liable to serve. Of the three naval bases in the Philippines, viz. Cavite (Manila), Olongapo, and Polloc, none is properly equipped for the repair and maintenance of ships. Cavite is to be 'developed moderately'—according to the Naval Secretary's report for 1920—while the other two stations are ultimately to be abandoned. It will be seen, therefore, that nowhere in the Archipelago does there exist a base capable of supplying the bare needs of a great fleet; nor, up to the end of 1920, were there any facilities for the storage of coal, oil, provisions, or ammunition in the vast quantities required by a modern fleet. If the Pacific Fleet visited the Philippines it would have to bring with it everything it needed in the way of fuel and stores, and once there it must rely on its own repair ships to make good any damage or defects. There are no defences worth the name at Cavite. The old batteries erected by the Spaniards have never been reconstructed on modern principles, and, except for a few quick-firing guns, the station could offer no resistance to a hostile squadron.

From time to time within the past twenty years the fortification of Manila and other strategic points in the islands has been proposed, but nothing has yet been done. This omission is not due entirely

to considerations of economy. The most experienced naval and military officers in the United States have advised against the building of costly fortifications at Manila and elsewhere, on the ground that without the support of a powerful fleet the Archipelago as a whole could not be defended against invasion by a Japanese army ; and, as has been shown, no facilities exist in the islands for even the temporary maintenance of such a fleet. A distinguished American naval officer has put the case very cogently: [1] 'The Philippines are there for Japan whenever she likes to take them, and nothing can prevent her from seizing them when she feels disposed to do so. As at present circumstanced, we could do nothing whatever to protect them in time of war. If we were foolish enough to locate a fleet at Manila the history of Port Arthur would repeat itself, with us in the rôle of the Russians. An expeditionary force, consisting of 18-knot transports, guarded by a squadron of reasonable strength, could leave the southern ports of Japan, reach Manila in three days, and make itself absolute master of Luzon before succour could arrive from Hawaii, our nearest naval base, which is some 5000 miles away. Consequently, when the " rescuing fleet " did turn up, it would find the Japanese flag waving over Manila, and itself, with depleted bunkers, forced to fight under the most disadvantageous conditions or to beat an ignominious retreat without standing upon the order of its going. That is not merely a picture of what might happen, but of what most assuredly will happen if war breaks out within the next few years.'

It is certain, at any rate, that the invasion of

[1] In a letter to the author.

the Philippines would present no serious difficulty to Japan. Her southernmost naval bases are less than 1300 to 1750 miles distant from the islands. Excellent landing places abound both in Luzon and Mindanao; the shore defences are either insignificant or non-existent, and the small garrison of trained troops could offer only the feeblest resistance to a landing undertaken simultaneously at different points. The Philippines must therefore be guarded by naval force or not at all, and, as the lack of a well-found fleet base near at hand puts effective naval protection out of the question for the time being, the islands would doubtless fall an easy prey to Japan in case of war with the United States. Those who endeavour to investigate the strategical problems to which a conflict would give rise must experience a feeling of amazement at the failure of the United States to take the most elementary precautions against the loss of the Philippines. It has built up a huge Battle Fleet that will ultimately be second to none in strength, but it has taken no steps to avert a disaster which would shatter American prestige in the East and leave the final issue of a war with Japan decidedly in doubt. An American naval officer has said with truth that 'any one really alive to the actual situation in our Pacific possessions must feel grave misgivings as to our future in that ocean.' 'There is,' he continued, 'one thought which we must dismiss from our minds, and that is that we are really ever going to allow any one to tell us to get out of the Philippines, or that the moral and economic interests of the world at large will be otherwise than definitely set back by our doing so. To do so voluntarily

is sufficiently like the proposition of removing both hands from a sheet of fly paper to make it difficult to appear graceful in doing so.'

Before examining in more detail the problem of defending the Philippines, it will be fitting to take a broad survey of the strategical situation in the Pacific as it would appear on the eve of hostilities between the United States and Japan. As it is improbable that the American Government would have to reckon with complications from the side of Europe, the naval command would doubtless feel justified in withdrawing the bulk of its forces from the Atlantic, leaving only enough vessels to maintain an extended patrol of the Eastern littoral. But at a moment when relations with Japan were becoming tense, Washington might hesitate to despatch the Atlantic Fleet to the Pacific, lest this measure, which would undoubtedly be interpreted in Japan as a direct threat of war, should precipitate the crisis. It is, therefore, by no means certain that the outbreak of war would find the whole American Navy concentrated in the Pacific, and several weeks might elapse ere the two Fleets combined. Japan would know how to turn this delay to good account. Her own forces could be concentrated far more swiftly and secretly than would be possible in the case of her opponent. Assuming, however, that the entire United States Battle Fleet, with its ancillary squadrons, flotillas, and train, was in the Pacific soon after the declaration of war, it is not easy to see what immediate action it could take against the enemy. So far as the defence of the American continental seaboard and the less remote oversea possessions was concerned, its task would not be difficult. It is generally assumed that the

main body of the Fleet would at once move out to Hawaii, where it would be favourably placed for controlling the Eastern area of the Pacific and covering the American coast from the Canadian border to Panama. Hawaii is approximately equidistant from California, Alaska, and Samoa, and therefore may be said to flank the lines of approach from eastward to each and all of those places. Given a strong fleet based at Hawaii and adequate naval stations in the Aleutian Islands (off the Alaskan Coast), and at Tutuila (Samoa), the whole of the Eastern half of the Pacific Ocean should be susceptible of easy and effective control. Geographically, the strategical position of the United States in this ocean is remarkably good, not excepting the Western area, as will shortly appear; but up to the present its possibilities have not been exploited. On this point some recent remarks by Admiral Niblack, U.S.N., may aptly be quoted:

'Geography has placed a large ocean on either side of us, between us and our powerful neighbours. Looking across the Atlantic, we have always accepted a defensive rôle, and talked, and thought, and built to repel an enemy if he should come. This habit of thought, of waiting for something, of holding back, of expecting things to come to us, has almost destroyed our initiative. . . . We have reasoned that our Fleet would give us time to bring up our supposed reserves and enable us to raise an army of volunteers. Facing this comfortable solution, we have turned our back upon the Pacific. Geography, acquisitiveness, or destiny has presented us in the Pacific with Alaska, the Hawaiian Islands, Tutuila (Samoa), Midway Island, and Guam, as stepping-stones across the Pacific, and, by their possession, imposed upon us the same policy as if they were actually in the hands of an enemy or a rival, because

they exist and cannot be sunk ; and if we fail to make the right use of them geography will turn them against us, just as it turned them away from others and to us. The Pacific permits to us no defensive policy such as we have softened ourselves to in the Atlantic. Our coastline extends to Guam, even if we should scuttle in the Philippines. We can wriggle, and squirm, and make a wry face over paying the bill, but we can never evade ultimately the cost of properly fortifying a naval base in the island of Guam, and in a lesser degree in the island of Tutuila, in the Archipelago of Alaska, and on Midway Island, just as we have already begun the good work in the Hawaiian Islands and at Balboa at the Pacific end of the Panama Canal ; the reason being, if there were no other, to prevent their being used against us as commercial supply-stations or naval bases by an enterprising rival or enemy.'

Lord Salisbury's advice to the British people touching the study of big maps is equally applicable to the American people of the present generation. Thanks mainly to the anti-Japanese agitation on the Western Coast, their attention has been drawn to the Pacific as a possible war area of the future, but their vision does not appear to have extended far enough. More harm than good has been done by the well-meant efforts of writers such as Homer Lea, whose sensational forecast of Japanese operations against the United States was so demonstrably absurd that it encouraged American public opinion to dismiss the whole subject as an idle scare. Every intelligent American knows that his home coasts are, humanly speaking, secure against invasion from the Far East. It is some ten years since Homer Lea wrote his book, in which he described at great length the transport of a huge Japanese army across the Pacific, its landings in Washington,

Oregon, and California, and its eventual conquest of the whole Pacific slope. Even at that date the American Navy was quite strong enough to have made such an operation absolutely impossible; and since, in the interval, its position of relative strength *vis à vis* the Japanese Navy has substantially improved, there is less reason than ever to include an invasion of the American mainland among the possible events of a future war. But security against invasion is not everything. If Great Britain, during the World War, while keeping her homeland inviolate, had nevertheless lost several of her most important oversea possessions, she would rightly have been judged the defeated party. Similarly, if the United States, engaged in war with Japan, succeeded in protecting her continental seaboard and in keeping the whole of the Western Pacific free of enemy forces, but at the same time forfeited the Philippines and Guam, she also would be judged the loser. Yet this is precisely the risk which the American people, consciously or otherwise, have been incurring for the last twenty years, and which they still incur. Their most distinguished strategists have told them time and again that they already have in the Pacific the finest strategical positions imaginable, which only require development to prevent war by making it too hopeless a business for any prospective enemy. 'It is a game of chequers, with our advantage against the whole world as far as mere positions go. It is clearly in our power to compel the strategy of the Pacific in time of peace in such a way as to avoid the possibility of war.' For less than the cost of two modern battleships such a chain of naval bases could be thrown across the Pacific as would give

the American Fleet entire command of the situation, and enable it to wage a war both of offence and defence with the whole of its available resources. But for some inexplicable reason no provision has been made by successive Administrations for the rudimentary needs of the Navy in the event of war with an Asiatic Power.

The only insular position which has been turned to strategical use is that of Hawaii. Here, at Pearl Harbour, Oahu, some twelve miles from Honolulu, the capital, a naval base has long been in process of gradual development. A large dry dock, capable of taking warships of any dimensions, was opened in August 1919, and the dockyard is being extended and supplied with the plant necessary to deal with heavy repairs. At the present time, however, Pearl Harbour is not equal to the task of maintaining a great fleet, nor is it likely to be in that position for several years to come. The programme includes the building of fortifications, armed with 14-in. guns and heavy mortars, which would be powerful enough to secure it against attack from any quarter; but it is doubtful whether this armament has yet been mounted. Although Hawaii has been American property since 1898, it is only within the last ten or twelve years that its great strategical value has been recognised. To many Americans it is a fact of sinister import that so large a percentage of the population of Hawaii should consist of Japanese immigrants. In June 1919 the total population of the islands was estimated at 250,000, of whom no fewer than 110,000 were Japanese. Since many of the latter are males of military age, it has been suggested that, in the event of war, they would at once rise in a body and make them-

selves masters of the islands. But while this contingency need not be dismissed as wholly fantastic, it is certain that the possession of Hawaii would be determined in the long run by sea-power, and so long as the American Navy remains supreme in the Eastern Pacific Hawaii could not be held by an enemy.

It has been shown that a strong fleet based upon Pearl Harbour would be favourably situated for defending the Pacific Coast, as well as the oversea territories in Alaska and Samoa. On the other hand, it could not extend protection to the Philippines, which lie nearly 5000 miles to the westward of Hawaii. In these circumstances there can be no serious doubt at the course that Japanese strategy would take. Whether or no Japan really covets the Philippines for their own sake is a question irrelevant to the present issue, but it is certain that they would provide her with an irresistible opportunity of dealing a smashing blow at the United States. But for one factor the fate of the Philippines in the event of an Americo-Japanese conflict would be a foregone conclusion. That factor is Guam—a position which has rightly been described as unique, commanding, and of supreme importance, the veritable key of the Pacific. This small island, sometimes referred to as Guaján, is the southernmost and principal unit, in point of size, of the Marianne or Ladrone Archipelago. It was ceded by Spain to the United States under the Treaty of Paris concluded in December 1898, since when it has been under the jurisdiction of the American Navy Department. The Governor is a naval officer appointed by the President, the system of administration is predominantly naval in character, the garrison consists

of Marines, and the port is not open to foreign vessels of war or commerce except in special cases. This circumstance shows clearly enough that the unique strategical value of the island has always been appreciated by the United States naval authorities, and suggests that if purely naval counsels had prevailed Guam would long since have been developed on a scale commensurate with its importance. The island is 32 miles long, varying in breadth from four to ten miles, the circumference being about 100 miles and the total area 228 square miles. The anchorage in Apra Harbour is 8 miles from Agaña, the capital. It is approached by a channel through the coral reefs, and is spacious enough to accommodate a large fleet at the cost of moderate dredging. During the Spanish régime it was defended by two old masonry forts, now, of course, quite obsolete, but surveys undertaken by the American naval authorities have shown the anchorage to be capable of easy defence by modern methods. According to a plan submitted in 1905, Guam could have been made virtually impregnable for an outlay of £1,500,000, which included the erection of shore batteries and the laying of mine-fields and other obstructions. Nevertheless, no steps have been taken to carry out such work, and the island remains to the present date a mere coaling station, without any adequate defences and with no facilities for the upkeep of a naval squadron. To say that Guam bears to the Philippines the same relation that Heligoland bore to the German Bight, or that Malta bears to the defence of British interests in the Mediterranean, would be to understate rather than to exaggerate the facts of the case. By properly fortifying and developing this island as a naval

station of the first rank the American people would do much to relieve themselves of anxiety as to their future in the Western Pacific; for no Power would venture to molest the Philippines while a strong American 'fleet in being' was based at Guam, only 1500 miles away. On the other hand, lacking fortifications, docks, magazines, and the other appurtenances of a great naval base, the island would not only be useless as a *point d'appui*, but must fall into the enemy's hands. The fate of the Philippines is thus indissolubly connected with that of Guam. We may, indeed, go further, and say that the issue of an Americo-Japanese war would primarily be decided by the fate of Guam.

The American Government has at length awakened—none too soon—to the supreme importance of this lonely outpost in the Pacific. In the Naval Secretary's report for 1920 the following announcement appears: 'The project for the development of Guam as a naval base in accordance with the announced policy of the Navy Department is progressing. The detailed plans and recommendations are being prepared. These will be in accordance with the approved naval plans for national defence, and will be made the basis for recommendations as to appropriations.' Provided these recommendations are accepted by Congress, that the necessary funds are promptly voted, and that no political complications intervene before the work is finished, Guam a few years hence will doubtless have become a first-class naval station, in which case the whole strategical outlook will have altered to the advantage of the United States. Meanwhile, however, the development scheme has not advanced beyond the paper stage, and in view of the attitude of Congress

towards previous recommendations for naval works in the Pacific, the rejection or postponement of the Navy Department's plans on behalf of Guam would cause no surprise. One thing may be regarded as certain, namely, that if a serious crisis arose before Guam had been furnished with proper defences, dockyard plant, and naval magazines, it would be too late to make good the deficiency.

There is convincing evidence that the Japanese are fully alive to the significance of the island, and are not disposed to remain passive while America makes a belated attempt to repair her long neglect of this magnificent strategical position. The majority of the European delegates at the Peace Conference were mildly surprised at the emphasis with which Japanese envoys urged their country's claim to become mandatory of the former German territories north of the Equator. It is doubtful whether even President Wilson and his staff at Versailles realised to what they were committing themselves when—after some hesitation, it is true—they acquiesced in the clauses which confirmed Japan in the possession of the Caroline, Pelew, and Marianne Islands, excepting Guam, and of the Marshall Islands. The effect of this arrangement has been to surround Guam with a cordon of potential Japanese strongholds and naval bases. Japan, as mandatory of the islands, is not entitled to fortify them, but that she would forgo the use of such invaluable bases in case of emergency is not to be believed. Hostile submarines, working from a base at Saipan Island, in the Marianne group, would be within a few hours' sail of Guam. A few hundred miles to the south-west lies Yap, the administrative centre of the Archipelago. This place

was formerly the German wireless centre in the Pelew group, the other stations being at Nauru and Angaur. The Yap wireless station, with its 200 ft. steel trellis mast and its oil depot, was bombarded and destroyed by H.M.S. *Minotaur* on August 12, 1914. In the following October Yap was taken possession of by the Japanese Second South Sea Squadron. The island is admirably adapted for use as a base for submarines or other vessels operating against the Guam-Manila line of communications, and so long as it remained in enemy occupation this route would never be safe.

Even if she were driven out of Yap, Japan would still have the Pelew Islands, west of the Carolines, with a good harbour at Angaur, where, in September 1914, the *Emden* coaled preparatory to making her famous raid into the Indian Ocean. Some 1400 miles east of Guam lie the Marshall Islands, which came into prominence during the World War as one of the bases used by the German Cruiser Squadron, under Admiral von Spee. He coaled at Brown Atoll and Enivetok, subsequently moving to Majuro in the same group, from which place the German raiders *Cormoran* and *Prinz Eitel Friedrich* left to prey upon shipping in Australasian waters. When the Marshall Islands were in German ownership the beginnings of a naval base had been made at Jaluit. Since the Japanese occupation this base is said to have been further developed, and there is now a depot for the storage of coal and oil. Similar reports have been heard in connection with Yap, Angaur (in the Pelews), Pulap, and Ponape, in the Carolines. Notwithstanding that the military government installed upon the first Japanese seizure of these islands has since been replaced by a civil administra-

tion, they are regarded primarily as military ports, and very little information concerning the works in progress there is allowed to leak out. Reports from American sources early in 1920, to the effect that naval works and fortifications were then being built at Jaluit, Truk, Angaur, Yap, and Saipan, were categorically denied in Japan. On the other hand, the Tokyo Press has more than once intimated that the fortification of Guam by the Americans would leave Japan no option but to take similar measures at Saipan, Yap, and other strategic points in the South Sea Islands, in order to maintain the local balance of power. How this argument could be reconciled with the obligations entailed by the acceptance of the mandate was not explained. Without in any way impugning the good faith of Japan, it may be accepted as certain that these newly-acquired territories will henceforth occupy a most important place in her scheme of naval strategy. They cannot, therefore, be ignored in relation to Guam, which is destined to become the principal American war station in the Western Pacific.

That their proximity tends to reduce the value of this base is self-evident. Scapa Flow during the World War would have lost a great deal of its value as the chief anchorage of the Grand Fleet had the Germans possessed submarine stations in the Shetlands; yet a reference to the map will show that an American fleet at Guam would be in no less precarious a situation. Much depends, of course, on the extent to which this island base is to be developed. The building of strong seaward fortifications, the construction of a commodious artificial harbour in place of the present exposed

anchorage, to be approached through a channel capable of being effectively closed against submarines; the establishment of an aviation centre with adequate provision of airships and aeroplanes; the installation of listening devices,—these and other improvements would go far towards making Guam reasonably secure as a naval headquarters, in spite of the nearness of potential enemy bases. There is, however, yet another factor which the Americans will have to take into consideration when framing their plans as to the future of Guam. Before the American régime this island was self-supporting in regard to food. The crops of maize, rice, sweet potatoes, sugar, etc., were ample for all local needs, and a surplus remained over for export. During the last twenty years, however, agriculture has sensibly declined. The native Chamorro found it more profitable to work on the Government roads, with the result that his farm was neglected and the crops soon fell below the minimum necessary to feed the island population. But for the supplies which now reach them every month from the United States, the 13,000 natives could not subsist, and if this inflow of food were interrupted a most serious situation would ensue.

No survey of American base power in the Pacific would be complete without some mention of the Aleutian Islands, Midway Island, Wake Island, and Tutuila. The need of a fortified base in the Aleutian group, preferably at Dutch Harbour, Unalaska, has long been urged by American naval officers. Alaska has been termed 'the storehouse of the future.' It is exceedingly rich in mineral resources, though at present the major proportion of its revenue is derived from the fisheries. In

1918 this industry alone employed 31,000 persons, 640 steam vessels, and 7600 smaller craft, the total value of the fish products in that year amounting to £12,000,000. The exposed position of the Aleutian Islands, barely 2000 miles from the northern ports of Japan, would render them liable to destructive cruiser and submarine raids if no American naval force was based near at hand. It is true that a fleet operating from Pearl Harbour, Hawaii, could probably secure the islands and the Alaskan coast from serious invasion, but it would not be able to protect them against lightning raids. The only existing naval station in Alaska is at Sitka, which was established in 1867, but, except for a small stock of steam coal, it has no facilities of any kind, and is without defences.

Midway (or Brook) Island is a small island situated 1126 miles to the north-west of Pearl Harbour, conveniently near the Hawaii-Guam route. It is now a cable relay station. At present no ships drawing more than 17 feet of water can cross the bar. At an estimated cost of £1,000,000, however, Midway could be transformed into a fortified auxiliary base, which would lengthen the westward reach of a fleet working from Pearl Harbour by several thousand miles. Of considerably greater importance is Wake Island, which lies 1300 miles east of the Marianne group on the direct route between Hawaii, Guam, and Manila. The conversion of Wake Island into a well-defended fuelling station would materially assist in consolidating this vital line of communication. The island of Tutuila, Samoa, is the only American possession in the Southern Pacific. It is 2300 miles distant from Pearl Harbour, Hawaii. The naval station is at

Pago Pago, the only good harbour in Samoa. It is approached by a rocky channel, the depth of water being great enough to allow vessels of the largest dimensions to come alongside the wharves. Plans were drafted in 1900 for the construction of a dockyard at Pago Pago, and a tract of land was purchased for this object; but the scheme was not put into execution, and there are consequently very limited means of repairing and supplying naval vessels at this port. It possesses a high-power wireless station, which enables communication to be maintained with the United States.

The enormous expanse of the Pacific makes base power and large steaming radius the dominating factors in the strategical problems of that ocean. Without a chain of well-defended fuel stations it would be impossible for the American Fleet to operate for any length of time in the Western Pacific. An estimate of the fuel supplies required by a large fleet making the trans-Pacific voyage was prepared five years ago by an American naval officer;[1] and while this requires modification in view of subsequent additions to the number of colliers and tankers, and of the increased proportion of oil now consumed by American warships, it will serve to illustrate the difficulties of maintaining a great naval force in the Pacific, even in times of peace. The hypothesis was that a fleet, consisting of 30 battleships, 20 of the largest cruisers, 40 destroyers, 20 colliers, three supply ships, and the fleet repair ship *Vestal*, had assembled off Panama to make a leisurely voyage to Manila and back, by way of Honolulu, Midway, and Guam. To reduce the

[1] Vice-Admiral Niblack: *Transactions of the Society of Naval Architects and Marine Engineers*, New York.

problem of supplying this fleet to its simplest form, the cruising speed for the voyage was limited to 10 knots, and practically no allowance was made in the time-table for delays due to bad weather, engineering defects, or the need of overhauling machinery. As the distance from Panama to Honolulu is 4685 miles, a non-stop run between these ports would necessitate the towing of certain ships which had a small coal capacity; and it was proposed, therefore, to break the journey at Magdalena Bay, a deviation of only 125 miles from the direct route. The fleet would sail from Panama with bunkers and oil tanks filled to the utmost capacity. It was assumed that the aggregate consumption of fuel by the battleships, cruisers, and destroyers when at sea, steaming 10 knots, would work out at 18 tons of coal and $3\frac{1}{2}$ tons of oil per mile; while their daily consumption in port was reckoned at 1000 tons of coal and 160 tons of oil. As for the colliers and other auxiliaries, each of these vessels would burn one-sixth of a ton of coal (or one-eighth of a ton of oil) per mile at sea, or 12 tons of coal (10 tons of oil) in port per day. The American battleships carry a supply of fresh provisions sufficient for forty days, and dry provisions for five months, and for the hypothetical cruise now being discussed it was arranged that the refrigerator ships *Culgoa*, *Glacier*, and *Celtic* should be emptied by the time they reached Guam, whence they were to proceed to Sydney, Australia (3000 miles), to take in a fresh cargo, returning to Guam to meet the fleet on its homeward voyage. For the outward voyage, Panama to Manila, the consumption of fuel was estimated as follows:

	Sea Miles.	Coal, tons.	Oil, tons.
Panama to Magdalena Bay .	2,265	49,000	8,500
In port 5 days . .		5,000	800
Magdalena to Honolulu .	2,543	55,000	9,500
In port 5 days . .		5,000	800
Honolulu to Guam *via* Midway	3,450	74,700	13,000
In port 10 days . .		10,000	1,600
Guam to Manila . . .	1,542	33,500	5,800
In port 10 days . .		10,000	1,600
Total . . .	9,800	242,200	41,600

By adding to the total bunker capacity of all the ships in this fleet the total coal and oil carrying capacity of the twenty fuel ships accompanying it, and comparing the aggregate figure with the estimated consumption of fuel as shown in the table above, we obtain the following data:

	Coal, tons.	Oils, tons.
In bunkers . . .	129,000	16,900
As cargo . . .	120,000	28,100
Total	249,000	45,000
Consumed as per table .	242,200	41,600
Margin of fuel remaining on arrival at Manila .	6,800	3,400

As the surplus remaining over would be negligible, the Commander-in-Chief would have to solve the problem of obtaining the 240,000 tons of coal and the 40,000 tons of oil needed to carry his fleet back to Panama. Singapore and the Australian ports would be the nearest sources of supply for bunker coal, but it is unlikely that they would have on hand an adequate supply of the best steam coal

which is required for naval use. It will be seen, therefore, that even in time of peace great difficulties would attend the fuelling of a large fleet that crossed the Pacific. In time of war the problem would, of course, be infinitely more complicated. For one thing, a cruising speed of 10 knots would be out of the question, especially when the fleet had left Hawaii and thus come within the radius of Japanese submarines. It would, on the contrary, have to pursue a zigzag course at a minimum speed of 16 knots, and would therefore reach Guam with bunkers heavily depleted. Since none of the American Fleet colliers has a speed higher than 14 knots, these vessels could not accompany the fleet on its westward voyage without endangering the whole force. Everything would depend, therefore, on the adequacy of the fuel stocks at the intermediate stations, such as Midway and Wake Island, and at Guam itself. The capture of one of these bases by the enemy, or even the temporary exhaustion of its coal and oil reserves, might well have disastrous results for the fleet. While the Navy Department has very wisely built a number of large colliers and tankers for the exclusive use of the Navy, there are not nearly enough of these vessels to provide for the needs of a large force operating at a great distance from its main bases. Many more would have to be chartered, and, in fact, it is understood that an agreement exists between the Navy Department and the United States Shipping Board under which the latter has ear-marked the best of its coal and oil carriers for naval use in times of emergency.

But if experience in the World War counts for anything, the losses among these vessels would be

enormous. During that conflict no less than 244 colliers and 44 oil tankers in the service of the British Admiralty were sunk, mainly by enemy action, the losses in both types of craft amounting in the aggregate to close upon one million tons gross. Ships of this type are peculiarly vulnerable to submarine attack owing to their great length and low speed. So serious were the casualties suffered that the reserve of oil fuel for the British Fleet was gradually reduced to an eight weeks' supply, and at one time it actually became necessary to issue orders that the speed of oil-burning warships was to be limited except in cases of extreme urgency. The bulk of these losses were suffered during the comparatively short voyage from the eastern ports of the United States to Europe, and 90 per cent. of them in the so-called 'danger zone'—that is, a few hundred miles from the English coast, in an area which was closely patrolled. In the great wastes of the Pacific, where many of the most effective anti-submarine devices could not be used on account of the abnormal depth of water and the immense distances involved, the submarine menace to slow-steaming vessels would be proportionately intensified. But torpedo attack would not be the only danger. Guam, Midway, Wake Island, and even Pearl Harbour itself, lying well within the radius of large ocean-going submersibles starting from a point in the Caroline or Marshall Islands, would offer fruitful fields of activity to submarine minelayers, which, as we have seen, are a type to the development of which Japan is paying marked attention. Nor would it be possible to guarantee any of these bases against the attentions of surface minelayers. The British line of patrols strung across the northern

exit from the North Sea could not prevent the German auxiliary cruiser *Berlin* from stealing out to lay, off the Irish coast, the mines which sank the *Audacious*. Other surface mine-carrying ships, notably the *Moewe* and the *Wolf*, which contrived to pierce the blockading cordon, jettisoned their deadly cargo in such remote waters as those of Cape Agulhas, the Gulf of Aden, and the Bay of Bengal. The Americans would therefore find it necessary to maintain a squadron of minesweepers at Pearl Harbour and every other base to the westward of that point. Japanese auxiliaries, of great steaming endurance, might even lay mines in the Gulf of Panama, thereby endangering vessels on their way, *via* the Canal, to join the forces in the Pacific.

Enough has been said to indicate the most serious difficulties which would handicap American naval operations in the Western Pacific. Japan, on the other hand, occupies a strategic position of unique advantage. Even before the acquisition of the South Sea Islands she was virtually impregnable to attack by the United States, and could, at the same time, have reckoned with confidence on seizing the Philippines in the event of war. By taking over the former German insular possessions she has now established herself on the flank of the only line of communication open to America, thus securing a strategical advantage of capital importance. Her own coasts are secured against aggression by a chain of naval stations extending from the Kuriles to Formosa. The multitude of her harbours would make an effective blockade no easy matter even for a powerful fleet based on the Philippines and Guam. If, however, the Philippines came into the possession of Japan and she was able to hold them, the possi-

bility either of blockade or of serious interference with her shipping would altogether vanish. Since the United States is without a foothold on Chinese territory, Japan would have no reason to fear attack from the western side. Owing to the narrowness of the Korean Straits, the closing of the Sea of Japan to enemy vessels would be a simple matter. From Fusan, in Korea, to Shimonoseki is a distance of only 120 miles, and midway between the two coasts stands the island of Tsushima like a sentinel guarding the passage. La Pérouse Strait, the northern entrance to the Sea of Japan, which is less than 40 miles wide and is flanked on either side by Japanese territory—Sakhalin in the north and the Hokkaido coast on the south—could be barred with equal facility. Since the time of the Russian War the Japanese have modernised and strengthened their coastal fortifications at considerable expense. They had previously been armed with Canet and Armstrong guns, from 9-in. to 12-in. calibre, on disappearing mountings, and in some cases with howitzers as well. At the present time the principal sea forts, such as those at Tokyo Bay, Maidzuru, Nagasaki, Hiroshima, Shimonoseki, Hakodate, and Tsushima Island, are furnished with modern guns of heavy calibre and great range. Additional protection is afforded by local torpedo flotillas, minefields, and aircraft. The efficacy of the coast defences in the southern portion of Japan was tested during the manœuvres of 1919, when repeated attempts at bombardment and landing were adjudged to have been repelled with heavy loss to the assailants. Furthermore, by means of an excellent system of railway communications, large bodies of troops could be moved with great rapidity to any threatened

point along the coast. A study of the Japanese railway map suggests that the system has been planned with more than a casual view to strategic requirements. On Honshu, the main island, every part of the coast, excepting only a short stretch in the Wakayama district, is served by the railway. Experiments have been made recently with heavy guns mounted on railway trucks for the purpose of mobile coast defence, and it is possible that this method, which has many advantages over fixed batteries, besides being far more economical, will be greatly extended in the future.

The only portion of the Japanese Empire which from its geographical position is exposed to successful attack is the Island of Formosa, or Taiwan, which was ceded by China in 1895. Its food and mineral products make Formosa an asset of value to Japan, who imports nearly one-fifth of the annual rice crop, and also obtains large quantities of coal and copper from the same source. Extensive oil-fields are believed to exist on the island, but up to the present the yield has been limited. Situated only 500 miles north of Manila, Formosa is nearer to the Philippines than to Japan, and might therefore be successfully attacked by a joint naval and military expedition, provided the American Fleet had command of the sea in that area. There are, however, few good harbours in Formosa, and all of these are fortified. The permanent Japanese garrison consists of several thousand troops. Formosa would undoubtedly be useful as a base for offensive operations against the Japanese coast and sea-borne trade; but for the reasons stated its reduction by an American force need not be reckoned among the probabilities of a conflict in the Pacific.

CHAPTER X

POSSIBLE FEATURES OF A WAR IN THE PACIFIC

If naval power were measured by battleships alone, the American people would have little cause for anxiety as to their future in the Pacific. When the programmes now in hand on both sides of that ocean are completed, the United States will have about twice as many capital ships as Japan. But, as we have seen, many other factors must be taken into consideration. In the event of war with Japan the United States would at once be called upon to decide whether its distant insular possessions were to be defended or abandoned. In the latter case the strategical problem would be reduced to a simple form, and the United States Navy would be entirely adequate to fulfil the duties which would then devolve upon it. But if the passive surrender of the Philippines and Guam were held to be incompatible with the interest and prestige of the nation, a very different situation would arise; and since neither the history nor the traditions of the American people lead us to suppose that they would tolerate so monstrous a humiliation, it is safe to assume that the retention of the islands at all costs would be determined upon as a matter of course. That decision would necessitate the despatch of large naval and military forces to the threatened territory across many thousands of miles of ocean. Whether

the American Fleet could straightway proceed to the war zone would depend on what was meanwhile taking place in the Philippines and at Guam, but more especially at the latter point. If war broke out before anything had been done to convert Guam into a strong place of arms, it might, and probably would, fall into enemy hands in the first few weeks of the war, for it would pay the Japanese to devote all their efforts to capturing this island before attempting any move against the Philippines. With Guam in their possession, they could take the Philippines at their leisure, in the certainty that no one could interfere with them.

It is reasonable to infer from their conduct on previous occasions that the Japanese would act with swiftness and energy once a rupture had become inevitable. In 1894 a Japanese naval squadron began hostilities against China a week in advance of the formal declaration of war ; and the famous torpedo attack on Port Arthur in February 1904 took place only a few hours after the Japanese Government had signified its resolve to terminate the negotiations with Russia. Once the Japanese had determined to take up arms, they would carry on their preparations behind an impenetrable veil of secrecy. Long before the World War came to make us familiar with the meaning of a military censorship, Japan had brought the suppression of war news to a fine art. During both the Sino-Japanese and the Russo-Japanese campaigns, not a word of news leaked out of Japan which did not carry the official censor's imprimatur. Although the Russians maintained an army of agents in Japan to keep them informed of naval and military movements, they received no trustworthy intelli-

gence from these sources. The Japanese Fleet concentrated at Sasebo had left that port for its war base at Mokpho, on the south-west coast of Korea, without a soul outside Japan being any the wiser. Subsequent movements of the Navy and Army throughout the war were shrouded in the same secrecy. Divisions were assembled at the points of embarkation, transported across the Sea of Japan, and had reached the front before it was known that they were under orders to leave.

If the hypothetical conflict we are now discoursing began in 1922, the Japanese Navy would dispose of seven Dreadnoughts, four battle-cruisers, a large number of older armoured ships, 12 fast light-cruisers, more than 100 destroyers, and about 60 sea-going submarines. This force could not hope to fight a successful action with the entire American Battle Fleet, which would have more than twice as many heavy ships and destroyers; but it would be quite strong enough to overpower and annihilate the American Cruiser Squadron stationed at Manila and to cover the landing of expeditionary forces in the Philippines and at Guam. The broadside fire of the seven Dreadnoughts alone would be more than sufficient to sweep away the feeble defences at Manila and Guam. Mine-fields and any other obstructions which might be laid down in the fairways could be quickly removed by the sweepers and auxiliaries accompanying the Japanese Fleet. By requisitioning the passenger and larger cargo steamers in Japanese ports at any average moment, tonnage for the transport of 100,000 troops, with artillery and train, could be provided at the shortest notice. The Transport Section of the Tokyo War Office has made the most detailed

arrangements for the transportation overseas of large military contingents. It has been estimated by competent military observers that eight divisions could be landed on any coast within 1500 miles of Japan in fourteen days from the date of mobilisation. Embarkation and landing exercises have been frequently carried out in connection with military manœuvres during the past ten years, and the operation is therefore one with which the Japanese Army is familiar.

It is desirable at this point to review very briefly the strength and organisation of the Imperial Army, whose prowess in the war of 1904-5 against Russia earned it the right to be considered one of the finest and most formidable instruments of war in existence. Its rapid growth after the Chinese War of 1894-5 is shown by the following table compiled by Marshal Prince Yamagata:

	Marshals and Generals.	Other Officers.	N.C.O.'s.	Men.	Total.
Before Chinese War	36	4,235	8,770	65,241	78,482
Before Russian War	94	8,480	11,865	132,348	152,787
After Russian War	125	14,388	24,066	211,396	249,975

In the 1919-20 session of the Diet the War Minister, General Tanaka, on being pressed to disclose the peace strength of the Army at that date, gave the following figures: Officers, 16,045; non-commissioned officers, 28,369; privates, 228,317—a total of 272,731. Like the sister service, however, the Army has not by any means reached the maximum standard of strength to which the Government is determined that it shall ultimately attain. Their programme calls for an establishment of 41 army corps, with a total of one million bayonets, with

corresponding additions to the artillery and other branches. It is hoped to have by 1930 not less than 740,000 troops in the first line, 780,000 in the second line, and 3,850,000 in the reserves.[1] This is not an abnormal figure in relation to the Japanese population, but whether the national finances will ever permit it to be realised is open to doubt.

The Prussian Army is the master pattern on which Japan's military system has been fashioned, and the broad principles of organisation and training laid down by General Meckel, the Prussian officer who was appointed military adviser to the Japanese Government in 1885, have never been departed from. Beginning in 1918, however, a number of important reforms were introduced to embody the teachings of modern warfare. The Army is to be entirely remodelled, and the process, according to General Tanaka, will not be completed before 1936, though it is believed that this period will in fact be greatly abbreviated. One of the first changes to be approved was the constitution of each division on a three regiment basis and the abolition of the brigade. An army corps will in future comprise two divisions, or six regiments. This arrangement will shortly result in an establishment of thirty-two divisions, or six army corps, exclusive of the Guards' Division. The programme embraces also large additions to the cavalry, commissariat, engineering, railway, signalling, and aviation corps, and the creation of heavy and light tank corps. A certain Japanese general officer is credited with the remark that, however great the expense involved by this ambitious scheme may be, it will be a cheap price to pay for securing

[1] W. M. M'Govern: *Modern Japan.*

the tranquillity and undisturbed prosperity of the Far East.[1] 'Had England,' he declared, 'possessed twenty divisions on a peace footing, or—what amounts to the same thing—had Germany expanded her army into one of formidable strength, the world's catastrophe might have been avoided. Such preparedness would have sufficed to deter resort to arms.' A Japanese infantry regiment contains four battalions, each of 600 men; a cavalry regiment four squadrons, of 100 sabres each; a field artillery regiment has six four-gun batteries, or a total of 24 guns; while an engineers' battalion consists of three companies, each 300 strong. In accordance with the lessons of the World War, very substantial additions are being made to the artillery, especially the heavier types, including field howitzers of 4·6-in., 6-in., 8-in., 11-in., and 12-in. calibre, and high-velocity guns for long-range bombardment. The extension of the machine-gun service began in 1917, and is proceeding at the rate of ten new batteries per year. By 1927, perhaps before that date, every infantry regiment will have its own machine-gun section, equivalent to a strength of fifteen guns to a battalion. Besides the heavy and light tanks mentioned above, armoured cars and motor transport vehicles are being added to the Army as rapidly as funds permit. A liberal bounty is now paid to manufacturers and owners who build their cars to War Office specification and hold them at the Government's disposal in time of emergency.

Conscription, which applies to all males in good physical condition between the ages of 17 and 40, has been in force since 1873. Recruits, how-

[1] *The Japan Year Book*, 1920. Tokyo.

ever, are not taken until they reach their twentieth year. After serving two years in the infantry, or three years in the cavalry, artillery, or other branches, they pass into the reserve for a period of about five years, during which they must undergo 120 days' training with the colours. They are then transferred to the second line, in which they remain for ten years, being called up for two 60-day periods of training. On passing out of the second line they enter the Territorial or home defence army for thirty-two months. This system, it will be seen, provides for a huge reserve of trained manpower. Discipline in the Japanese Army tends to be draconic; and, although soldiering is very popular with the nation as a whole, the severity with which the rank and file are treated leads to many cases of desertion, a crime which has lately shown an increase.

It may be accepted as certain that by 1922 the peace strength of the Japanese Army will be not less than 300,000 of all ranks, with a first line reserve of 250,000 and a second line of 1,150,000 men. Since it is most unlikely that the fact of mobilisation would be publicly announced, a formal declaration of hostilities would probably find at least one million troops under arms, ready to start for any destination overseas. The transport problem would present no difficulty whatever. Thanks to the impulse given by the war, the Japanese mercantile marine has increased by leaps and bounds since 1914, the increment amounting approximately to 1,300,000 tons. Before the war Japan occupied the sixth place among the maritime countries of the world; to-day she occupies the third place, and, in spite of the slump which has recently set in, she is still hard at work

on the production of tonnage, her output for 1920 alone reaching 400,000 tons. The national merchant fleet now totals well over 3,000,000 tons. The system of State subsidies has encouraged the building of many large and fast steamers for the services maintained by such well-known firms as the Nippon Yusen Kaisha, which operates lines to Europe, America, Australia, and India; the Osaka Shosen Kaisha, which began by inaugurating a coastal service and now has vessels running between Japan, Europe, South America, and the South Sea Islands; The Toyo Kisen Kaisha, which owns a fleet of high-speed steamers running to San Francisco and South American ports; the Nissin Kisen Kaisha, a concern that dominates the Chinese coasting and river traffic; and the Nan-yo Yusen Kaisha, whose vessels ply mainly between Kobe and the Dutch East Indies. In addition to these leading companies there are many other firms which own fleets of steamers well adapted to military transport service. In January 1921, the number of steamers of 4000 tons and upwards was 130; while the smaller vessels, from 1000 to 3000 tons, which could be used as transports for short voyages, numbered 280. Ninety-five of these vessels had speeds of 14 knots or more, including eleven which were able to steam at 18 to 21 knots. Every vessel registered in Japan of more than 1500 tons and 14 knots speed is on the books of the Army Transport Section as a potential troopship. The efficiency of this organisation was demonstrated in the war with Russia, and it has been greatly developed since that time. We may therefore assume that a Japanese expeditionary force of 50,000 men could be placed on board a fleet of transports, possessing an average speed of

15 knots, within a few days from the issue of the mobilisation order. If the embarkation took place at the southern ports of Japan, the voyage to the Philippines would occupy less than five days ; or, if Guam were the objective, that island, distant only 1360 miles from Yokohama, could be reached in four days.

The presence of a strong American Fleet in the western area of the Pacific would, of course, deter Japan from undertaking military expeditions of this kind. On the other hand, her conduct in previous wars justifies the supposition that she would take good care to open the campaign at her selected moment, which would certainly not coincide with the visit of a formidable American naval squadron to the Western Pacific. The Cruiser Squadron at present based on Manila could offer no serious opposition to the Japanese Battle Fleet, and unless the ships sought safety in flight—which would be impossible if Japanese battle-cruisers were near at hand—their destruction would be inevitable. In view of the overwhelming strategic importance of Guam, this island would doubtless be the first Japanese objective. The reduction of its feeble defences would be a simple matter for the heavy ships, and, once the mine-fields had been cleared out and the batteries silenced, the landing would proceed with the utmost celerity. The sanguinary fighting round Port Arthur in 1904 taught us that Japanese troops will cheerfully sacrifice themselves in hecatombs when the order goes forth to take an enemy position at all costs. Thus the resistance which the small garrison of Marines would be able to offer could not stem for long the tidal wave of invasion. If the expeditionary force reached Guam at dawn, the Japanese might count on having firmly estab-

lished themselves on the island before nightfall. A simultaneous attack on the Philippines and Guam would place no abnormal strain on Japanese naval, military, or shipping resources. In the case of the Philippines expedition, the landing itself would doubtless be made at one or more points where there were no seaward defences. The complete subjugation of the islands would not be attempted at once ; it would suffice if the principal harbours were seized, garrisoned, and hastily fortified, an operation for which two weeks would be a liberal time allowance. The conclusion is that within a fortnight after the beginning of hostilities, the United States would find herself bereft of her insular possessions in the Western Pacific, and consequently without a single base for naval operations in those waters. Those who demur to what may seem a somewhat startling statement are invited to examine the premises on which it rests, and to judge for themselves whether any other inference can be drawn therefrom.

With Guam and the Philippines in enemy hands, the problem confronting the United States would become well-nigh insolvable. Here it may be interpolated that Japanese strategists, who have discussed in an academic way the possibilities of such a war as that we are now considering, have satisfied themselves that at this stage the United States would negotiate for peace, realising the impossibility of retrieving the situation. In their case the wish is probably father to the thought. Whatever view the American Government might take, it is scarcely conceivable that public opinion in the United States would tolerate a passive acceptance of the accomplished fact and own defeat at the very outset of the struggle. It is far more likely that a

vociferous demand for action of some sort would arise, strong enough to compel the Government to bow to the popular will. If so, several courses would be open to the American naval command, but whether any of them would lead to the desired goal is doubtful. They might assemble the whole of their effective Battle Fleet at Hawaii and improvise an advanced base at Wake Island, whence they could either demonstrate off the Japanese coast or make a bold attempt to recapture Guam. The former alternative might, or might not, bring about an action with the main Japanese Fleet, though it is hardly to be expected that the Japanese would needlessly hazard the tremendous advantage they had won. Moreover, a stay of any length in Japanese waters would expose the American Fleet to intensive submarine attack, the perils of which would be aggravated by the necessity of steaming at moderate speed in order to economise fuel. If the Fleet were to cruise at high speeds its coal and oil would soon be exhausted, and it would be compelled to return to Wake Island for fresh supplies, since the operation of coaling or oiling at sea would be attended with too much risk for submarine-infested waters. Wake Island, however, would afford no secure refuge for a large fleet. Not only are its anchorage facilities limited, but it is situated only a few hundred miles north of the Marshall Islands, which would probably become the rendezvous of Japanese submarines. In these circumstances heavy losses would be almost inevitable; nor must it be forgotten that serious damage from torpedo, mine, or other cause would be equivalent to total loss in view of the absence of docks and repairing plant. Any attempt to tow a

damaged ship from Wake to Honolulu, a distance of 2010 miles, would be hopeless if enemy submarines were about. For the same reason a Fleet action fought in the Western Pacific would be a most perilous adventure for the Americans, who, being without a proper base, could reckon with certainty on losing every disabled ship.

It is just possible that the knowledge of their enemy's predicament in this respect might tempt the Japanese Fleet to accept battle. If so, they would have many points in their favour to balance the numerical superiority of their opponents. First, they would be fighting at no great distance from their own great naval bases, and would therefore arrive on the scene of action in a condition of maximum fighting efficiency, and with the knowledge that a short and secure line of retreat lay open to ships that might suffer injury. Secondly, they could emerge with the whole of their serviceable heavy ships, cruisers, and destroyers, including the older boats of limited fuel capacity; whereas it is extremely doubtful whether the American Fleet would be accompanied by more than a portion of its full complement of destroyers. Thirdly, they would possess in their four battle-cruisers of the *Kon-go* class a squadron of heavily-armed ships at least six knots faster than the American battleships—the first American battle-cruiser will not be ready before 1923—thereby gaining a tactical advantage of the highest importance. Fourthly, having decided to fight, they would proceed to call up every available submarine, ordering these boats to lie in wait to attack the American Fleet before and after the action. This list does not by any means exhaust the advantages that the Japanese

would enjoy, but it will serve to show that the numerical preponderance of the Americans would be heavily discounted by other factors. Any attempt to predict the course of events after action had been joined would be profitless. On paper, at least, the contemporary battleships of the two Powers are well matched. The *Fuso*, *Yamashiro*, *Ise*, and *Hiuga* are individually equal to such ships as the *Pennsylvania* or the *New Mexico*, and somewhat better than the *New York* and *Texas*. They are also faster by 1½ or 2 knots. In 1922 each fleet will include two of the new 16-in. gun battleships—on the Japanese side the *Nagato* and *Mutsu*, on the American side the *Maryland* and *Colorado*. Failing authentic data it is impossible to say whether either fleet has a marked superiority in gunnery. All that can be said with confidence is that the shooting on both sides would be excellent, since both navies devote ceaseless attention to the gunnery branch. Japanese officers affirm, however, that battle practice in their Navy has been developed by methods more scientific and effective than those in vogue in the American service. Be this as it may, it is a fact that the Japanese Navy, as early as 1915, was using fire-control instruments which were not introduced into the American Navy until 1917 or later.

The Americans would be sorely handicapped by their want of fast cruisers and aircraft carriers, and would suffer a further disadvantage by reason of their inferior speed. It is most improbable that the action would be fought to a finish, for the Japanese could gain nothing by exposing themselves to the crushing preponderance of the American broadsides. They would be more likely to use

their superior speed as a means of breaking off the action when it suited them, leaving their destroyers, submarines, and torpedo planes to harass the enemy and administer the *coup de grâce* to his disabled ships. For the Americans, any result short of a complete and overwhelming victory would be tantamount to defeat, for the reasons already propounded; and the Japanese could be trusted to employ tactics which would rule out the chance of such a decisive issue to the encounter. The action would probably be fought at very long range. The atmospheric conditions in those latitudes normally permit of visual observation at greater distances than are possible in Europe, and some of the best naval shooting records have been made in Far Eastern waters. Then, too, the Japanese, having the higher speed, would be certain to fight at their own range and avoid closing to a distance at which the heavy American salvos could be concentrated with deadly precision. The presence of many destroyers with both fleets would be another factor tending to militate against close action. All modern American destroyers carry twelve torpedo tubes, six on each broadside, so that a mass attack by these boats would be a very serious business for the enemy. On the other hand, the Japanese boats have a heavier gun armament, the value of which was clearly demonstrated at Jutland and other naval engagements of the Great War. It is unlikely that the American Battle Fleet would include any pre-Dreadnoughts, but in view of their opponents' lack of battle-cruisers, the Japanese might deem it worth while to reinforce their fleet with such ships as the *Aki*, *Satsuma*, *Kurama*, *Ibuki*, and *Ikoma*, which would

be fast enough to keep out of harm's way and powerful enough to deal with anything short of a Dreadnought.

While an action fought under the circumstances described would most probably be indecisive so far as material results were concerned, it would nevertheless tend to confirm the supremacy of the Japanese in the Western Pacific and leave the Americans in no better position than before. Owing to the great distances to be covered, raids by either side on enemy territory would be too difficult and dangerous to make them worth while. But so long as Hawaii remained the principal base of the American Fleet, the Japanese submarines would probably be active in that quarter. The United States continental seaboard might also receive flying visits from the large Japanese submarines, in which case the Americans could return the compliment by sending the few long-range submersibles they possess to operate off the coast of Japan. It is doubtful whether either belligerent could interfere with the other's sea-borne trade to any serious extent. Japan would have no difficulty in protecting her communications with Europe, and American shipping would have little to fear from commerce raiders in the Eastern Pacific or the Atlantic. With the possible exception of raids on the Alaskan fishing fleet the Japanese could undertake no further offensive operation, and the naval campaign would therefore be brought practically to a standstill.

Having considered the possibilities of a Pacific campaign in which all the advantages of position and base power were on the side of Japan, let us now examine the very different situation that

would exist if war was deferred until Guam had been converted into a strong place of arms. The science of fortification has made such progress that this island could be rendered virtually impregnable to naval attack. Batteries of 16-in. or 14-in. guns, on high-angle mountings, would have a range at least 10,000 yards in excess of that of any guns mounted on shipboard, and a hostile fleet would thus come under fire long before it could reply. Guns mounted ashore in emplacements protected by massive armour and concrete are almost impossible to put out of action, and for the reasons explained in an earlier chapter their fire can be directed with extraordinary precision even at the longest ranges. An equal degree of accuracy can never be attained when firing from a ship. During the Great War coastal bombardments were reduced to a fine art in the Dover Patrol, yet, according to Admiral Bacon, the mathematical chance of hitting a lock-gate at Zeebrugge—a larger target than would be offered by a gun mounted ashore—assuming absolutely accurate aiming, was once every sixty-seven rounds. But since aiming from a ship at sea can never be quite accurate, the chances of making even this limited number of hits from a moving platform are substantially less than the mathematical calculation would suggest. At the same time the formidable nature of fire from heavy calibre guns mounted ashore was repeatedly demonstrated in the operations off the Belgian coast. On one occasion the monitor *Lord Clive* was heavily shelled by the German batteries at ranges between 18,000 and 22,000 yards, the salvos falling with uncanny precision and several direct hits being made. It was found subsequently that the German

12-in. and 15-in. guns could make very straight shooting up to 32,000 yards. The new American 16-in. 50 calibre gun at full elevation would have a range of 45,000 yards, and a single hit from its 2100 lb. shell, descending at a very steep angle, might prove fatal to the largest battleship. A limited number of these weapons, so mounted as to command the line of approach to the few landing places in Guam, would probably suffice to keep the strongest fleet at a respectful distance. If, in addition, a flotilla of submarines were based on the island, the Japanese would never dream of attempting to carry out a joint naval and military attack. Guam therefore could be made safe at no great expenditure of time or money, though the building of an artificial harbour large enough to contain a great battle fleet would prove a somewhat expensive undertaking.

American ability to defend the Philippines would primarily depend on the size and nature of the naval force that was available at Guam on the outbreak of hostilities. Whether submarines alone would be sufficient is doubtful. Since recent war experience has shown that large convoys of troopships can be given adequate protection against this form of attack, the knowledge that American submarines were cruising in the vicinity would not necessarily deter the Japanese from launching a military expedition overseas. The islands therefore might fall in any case, but their occupation by Japan would not determine their final status. The arrival of a powerful United States Fleet at Guam would not only imperil the Japanese line of communications, but enable the Americans to set about the task of recovering the Philippines. The

transportation from Hawaii—the most convenient point of concentration—to Guam, a distance of 3300 miles, of a military force strong enough to recapture the islands would be attended with great difficulty and danger, but would not be impossible; and, considering the vital importance of the issues at stake, the risks involved would almost certainly be accepted. After all, some two million United States troops were brought across 3000 miles of Atlantic Ocean in defiance of Germany's submarines, and there is no apparent reason why this performance should not be repeated on a much more modest scale in the Pacific; though it is true that the Americans would not have as many large and fast transports as were at their disposal on the first occasion. That the operation would be attended with fairly heavy loss is more or less inevitable. The transports would have to run the gauntlet of Japanese submarines working from bases in the South Sea Islands, and the 'danger zone' would extend from Hawaii right across the Pacific. Moreover, the possibility of hostile battle-cruisers coming out to attack the troopships would necessitate the provision of Dreadnought battleships as convoy guards. The Americans, however, could spare at least six Dreadnoughts for this work without reducing the strength of their Battle Fleet below the limit of safety. Assuming all these risks to have been taken, the accumulation of a great expeditionary force at Guam would be chiefly a question of time and ability to keep the trans-oceanic route reasonably safe, a problem complicated by the proximity of Japanese bases in the Marianne, Marshall, and Pelew Islands. The whole operation would tax the naval, military, and shipping

resources of the United States to their utmost capacity, and would demand a national effort far greater than the American people had to put forth during the World War. For some time at any rate no encouraging successes against the enemy could be looked for. On the contrary, the nation might have to endure a painful series of disasters to warships, troopships, and supply vessels on the long and perilous route from Hawaii to Guam, for it goes without saying that the Japanese, on their part, would strain every nerve to arrest the great westward movement of American man-power. The contest therefore would be one of *morale* as well as of material. The Japanese might consider it profitable to make spasmodic submarine raids on the American seaboard, hoping to spread such alarm in the coast towns as would lead to demands for local protection and thus embarrass the plans of the naval authorities.

As regards the actual work of convoying transports and supply ships across the Pacific, it should not be forgotten that the Americans gained invaluable experience in this direction during the World War. Nor is the submarine so potent an adversary to-day as it was three or four years ago. Since then the counter-offensive has developed far more rapidly than the attack, with the result that convoys could now be given a less qualified guarantee of safety than was possible in 1917 and 1918. The special disadvantages under which submarines labour in the Pacific, owing to the tremendous depth of water in certain areas, have already been mentioned, and this fact would materially facilitate the protection of convoys against under-water attack. Practically all the existing methods of submarine

detection are based on the sound produced by the engines of such craft when in motion. German submarines operating in the waters of Europe were frequently able to defeat these methods by lying on the bottom, but it would only rarely be possible for submarines working in the Pacific to adopt this expedient. As a rule they would be compelled to keep their engines in motion when below the surface, and in this way would be liable to detection by hydrophones and other listening devices long before they could come within torpedo range. It is worth noting in this connection, that the direct route between Hawaii and Guam traverses two of the greatest depressions in the Western Pacific, viz. Bailey Deep and Brooke Deep, where the depth averages 3400 fathoms. Once detected, any submarine operating in this neighbourhood would itself be in deadly peril. To remain submerged it would have to keep its electric motors running—thus betraying its whereabouts to the listening hydrophones—and when its batteries were exhausted, as they would be at the end of a hundred miles or so, it would have to come to the surface to recharge them, thereby exposing itself to attack by destroyers or other pursuing craft, surface and aerial. For these reasons the submarine is far less dangerous in the Pacific than in areas where the depth conditions are such as to permit a boat to lie on the bottom. Consequently, it is not to be expected that Japanese submarines, however skilfully and gallantly they were handled, would be able to prevent the transport of a United States army across the Pacific.

But the task before the Americans would not be completed when they had concentrated a powerful

military force at Guam, together with the necessary stocks of provisions, material, and equipment. The next step would be to retake the Philippines; and, while there is no reason to suppose this impossible, it would undoubtedly prove a difficult and costly enterprise. The distance of 1510 miles between Guam and Manila could be covered in four days by a fleet of transports steaming at 16 knots. But the passage to Manila would be extremely hazardous, leading as it does through a maze of islets where the channel in some places is so confined that ships must navigate it singly, and in these circumstances it would be impossible for the escorting warships to give effective protection against submarine or destroyer attack. Probably, therefore, the shorter route to Mindanao or to some point on the eastern shore of Luzon would be selected, in which case the journey could be made in three and a half days. It is reasonable to suppose that the Japanese would have been apprised by their naval or aerial scouts, or through their secret service agents, of what was in the wind; but they could have no exact foreknowledge of the point at which the Americans intended to land, and such defences as they were able to improvise would be too feeble to withstand a heavy bombardment from the battleships. Nevertheless, with equal courage and determination on both sides, the landing would prove a desperate and sanguinary business, and its success or failure would depend in the last resort on individual gallantry and determination. One lesson that the World War clearly taught was that no artificial obstacles can check the onward rush of men who have firmly resolved to gain their objective at all costs. After

Gallipoli and Zeebrugge it would be unsafe to say that any fortified position can be made impregnable to a storming party of trained fighting men inspired with an iron will to conquer. Once the Americans had contrived to gain a foothold in the Philippines, they could pour in sufficient troops from the reservoir at Guam to overcome the enemy's resistance. Japan also might attempt to send reinforcements, but the sailing of troopships would be a risky proceeding in view of American naval superiority, especially as the voyage from the southernmost Japanese ports would be almost as long as that from Guam. In the end she would be forced either to abandon the Philippines or fight a naval action to decide the command of the sea, and an action fought under such conditions, with the superior American Fleet fresh from its nearby base, would be a very dangerous adventure for the Japanese. That it would end victoriously for them is most improbable in view of all the factors involved, and an indecisive result would bring them no advantage; while defeat, whether partial or complete, would have the gravest consequences.

The recovery of the Philippines, together with the possession of a strong and well-stocked base at Guam, would enable the United States to wage offensive war against the foe. Her battleships would be within three days' steaming of the Japanese coast, and, although the latter is too well defended to be susceptible to serious attack, rapid bombardments of the more exposed localities might be undertaken with comparative impunity. Infinitely more serious to Japan would be the distant blockade which the Americans could now proceed to establish. With a moderate force of cruisers and armed board-

ing steamers, reinforced by destroyers and submarines, they would be in a position to intercept the majority of vessels bound for Japanese ports, especially those coming from Europe. A glance at the chart will show how admirably such bases as Manila and Guam are situated for a fleet engaged in this work. Owing to her dearth of fast cruisers the United States could not hope to reap the full benefit of her strategical advantage in this respect, but at least she could reckon on virtually paralysing the sea-borne trade of her enemy, and a prolonged interruption of this commerce might eventually force the Island Empire to its knees.

Meanwhile the rigours of the blockade would doubtless be intensified by aerial attacks on the great naval ports and industrial centres. The huge American 'NC' flying boats, when accompanied by their depot ships, have a radius of many thousands of miles. To illustrate the remarkable capabilities of these machines a cruise recently made by a squadron of six of them may be briefly described. The 'NC' type—a unit of which flew across the Atlantic in 1919—are large twin-engined biplanes fitted with a stout hull which enables them to alight on the surface of the sea and to ride out really heavy weather. They have a span of 103 ft., an overall length of 50 ft., and weigh, fully loaded, 6½ tons each. They are driven by two 400 H.P. 'Liberty' motors, which give them a maximum speed of about 100 miles an hour. Their equipment includes wireless apparatus, anchors, mooring gear, and an emergency repair outfit. Normally each boat carries a crew of two pilots, two engineers, and a wireless operator, but on the cruise in question they carried additional *personnel*, and the squadron

of six had a total complement of between fifty and sixty men on board. Leaving Philadelphia in November 1919, they made a seven months' cruise to the Caribbean Sea and the West Indies, and returned to Philadelphia in June 1920, after covering a distance of no less than 12,731 miles under their own power, without serious mishap or loss of life. The squadron was accompanied on its voyage by the minelayer *Shawmut*, as a mother ship, and the minesweeper *Sandpiper* as a repair and fuel ship. As a rule the *Sandpiper* preceded the squadron from port to port, with the *Shawmut* bringing up the rear, keeping a vigilant lookout for machines which might have met with accident. Both ships acted, therefore, as a movable base, though the facilities they possessed were necessarily restricted. It was not found necessary, however, to dock the flying boats, and repairs of a nature which required the boats to be lifted from the water were few and far between, the crews themselves carrying out minor repairs *en route*.

As each flying boat carried its own anchor and cable, the machines came to anchor at the various ports of call in the same way as ordinary surface vessels. Landings were frequently made in the open sea with the wind blowing at a velocity of 40 knots, and on more than one occasion the boats rode safely and undamaged through an 80-knot gale. The weather encountered shortly after the cruise began was such as to impose a severe test on the airworthiness and nautical qualities of the squadron, and the behaviour of the machines is held to have demonstrated that flying boats of this type are capable of carrying on active operations over periods of time hitherto considered out

of the question. An incident which occurred on the outward voyage showed that the large flying boat is becoming practically independent of weather conditions. On December 11, 1919, the squadron was due to leave Savannah for Cumberland Sound, and, in spite of the storm warnings sent out from the coastguard stations along the Atlantic Coast, the whole squadron put to sea without hesitation. In the teeth of a heavy north-east gale it made the voyage in safety, reaching Cumberland Sound at the appointed time. A large destroyer was found at anchor in the roadstead, the commanding officer of which expressed amazement that the machines should have ventured to fly in such tempestuous weather. *En route* from Sanchez, Santo Domingo, to San Juan, Porto Rico, the squadron met with a heavy tropical rainstorm. The machines were cruising in formation when, without warning, the gloom and rain squalls became so dense that vision was limited to a few hundred feet. So intense was the darkness that the flash of the motor exhaust was clearly visible ; yet through all this driving rain and wind, which finally changed to violent squalls, the machines held to their course for 90 miles, reaching the Porto Rican coast and skirting the shore for a further 120 miles to San Juan, which they reached punctually to time, and came to a safe anchorage in the harbour without mishap, having covered the distance of 210 miles at the rate of a mile a minute. When the squadron lay at Sanchez the swell in the roadstead was so heavy that the mother ship *Shawmut*, a vessel of nearly 4000 tons, rolled violently ; but the flying boats rode smoothly at their anchors, and in due course 'took off' from this rough water with ease. On

reaching the Guantanamo Fleet base the squadron was employed for several weeks in wireless exercises, making flights for anti-aircraft sighting practice and fire control observation, bomb-dropping, night-flying operations, and as tenders for the transport of *personnel*, at the conclusion of which they flew back to Philadelphia, as stated above. The performance of this squadron was officially summarised as below:

Total number of flights, all machines, 495.
Average length of each flight, 2 hours 25 minutes.
Flights in passage, 8210 nautical miles.
Other flights, incidental to fleet operations, scouting, and observing for gunfire, 4521 nautical miles.
Total distance flown by the squadron as a whole, 12,731 nautical miles.
Total mileage of all machines, 71,545 nautical miles.
Total hours flown, 1192 hours 25 minutes.
Fatalities or serious injuries during flying operations, none.

The foregoing details [1] of this remarkable performance are given to show that the American Navy already possesses a most formidable air weapon, which could be used with terrible effect against an enemy's dockyards and industrial centres. This arm is now being developed on a very large scale, and the programmes in hand are designed to give the American Pacific Fleet alone an establishment of 100 large bombing and torpedo planes and 50 high-speed scouting planes, all of which are to be in service by midsummer 1922. It is proposed to build several fast aircraft carriers, but in the meantime the fuel ship *Jupiter*, displacing nearly 20,000 tons, with a speed of 15 knots, is

[1] Compiled from an official report by the Secretary of the Navy, 1920.

being converted into a seaplane transport, and will be attached to the Pacific Fleet.

The unenviable position in which Japan would find herself if beset by a foe who had gained command of the sea has been vividly portrayed by a Japanese writer, Mr. Nakamura, who refers also to the danger of attack from the air.

'The necessity for Admiral Kato's new programme must [he wrote] be evident to all who have studied the naval problems of the near future. For Japan, the control of certain areas of the Pacific is a matter of life and death. It is sometimes argued that this control need not extend beyond the Sea of Japan and the Yellow Sea, which may be termed our "Narrow Seas." This betrays a complete misapprehension of the situation. At no period of the World War did Germany lose command of the Heligoland Bight or of the Baltic, and she was therefore able to guard her coastline from naval attack. But this did not save her from the fatal pressure of the blockade, the operation of which was the real cause of her defeat. Nor, in our own case, would the undisputed command of the Sea of Japan protect us from blockade. It would be within the power of a superior naval opponent to strangle our commerce and cut off our supplies without sending a single ship into the Sea of Japan. The majority of the merchant ships entering Japanese ports traverse certain steamer lanes which the enemy would have no difficulty in closing. Having established a blockade, he would certainly endeavour to undermine our resistance by attacking exposed parts of the coast with his battleships, submarines, and aircraft. Many of our great commercial and naval harbours would be open to attack, and the enemy, being well informed as to our resources, would know in what direction to concentrate his efforts. On the Pacific Coast the capital of Tokyo, the huge *entrepôt* of Yokohama, and the naval arsenal of Yokosuka would lie open to the visitations of hostile flying

machines. Osaka, the heart of our national industry, would not be beyond an enemy's reach, and the swarming industrial hives of Kyushu would present him with innumerable targets. Our coast defences, submarines, and torpedo-boats might be able to prevent the near approach of hostile armourclads, but they could do nothing against an invading air fleet. The sole defence against this form of attack is a battle fleet of sufficient power to sweep the outer seas and make it impossible for the enemy to send out his aircraft-carrying vessels. Sea-power and air-power have already become synonymous terms ; but above and beyond all we must provide ourselves with an adequate battle fleet if the safety of the Empire is to be assured.'

This writer has not exaggerated the dire consequences to Japan of an unsuccessful campaign in the Western Pacific. His purpose in reciting them was to enlist popular support for the Government's ambitious naval schemes, but his arguments might be employed with equal effect in justification of a less aggressive policy.

CHAPTER XI

WAR OR PEACE? POLITICAL AND ECONOMIC FACTORS

In the foregoing chapters an endeavour has been made to assess the naval strength of the United States and Japan respectively and to elucidate the peculiar strategical conditions that would govern an armed conflict for the mastery of the Pacific. It would, however, be misleading to judge the possibilities of such a conflict solely from the naval point of view, and our survey would be incomplete if it omitted to take into account certain other factors which must exercise a weighty, perhaps even a decisive, influence on the course and ultimate issue of a war between the two Powers named. Those factors may conveniently be grouped under two headings—political and economic; and it is proposed to examine both as briefly as their importance permits. As regards the first, it will simplify matters if we start by postulating that the Anglo-Japanese alliance would not come into operation in the event of a war between Japan and the United States. While that assumption may be challenged by persons who have an interest in promoting friction between the two great English-speaking commonwealths, it will be endorsed without hesitation by every one who knows the prevailing temper of the British people at home and in the Dominions. In Australasia and Canada, at all events, the mere

suggestion of an armed league with Japan against the United States would be repudiated with indignation, if only because public opinion in those countries unreservedly sympathises with the American attitude on the racial question. This truth is clearly recognised in Japan, where the Press in recent years has treated the alliance as an obsolete instrument of no practical value. Several journals, especially the *Yorodzu* and the *Yamato Shimbun*, have recommended its denunciation on the ground that it has become more of a hindrance than a help to Japanese policy.

That the alliance has lost much of its original significance must be plain to every observer. Concluded in the first instance as a mutual guarantee against Russia, who at that time was credited with designs both on Manchuria and India, it served its main purpose by keeping the ring clear during the Russo-Japanese War, a struggle in which Japan would not have engaged but for the knowledge that she was secured against French and, possibly, German intervention. Her enthusiasm for the alliance began to cool immediately after the victorious issue of that conflict, which, by breaking the military power of Russia, left her free to prosecute her aims in Korea and Manchuria. Nevertheless, she deemed it expedient to adhere to the compact in view of the possibility that Germany might succeed Russia as a candidate for political supremacy in the Far East. Now that this danger has been averted by Germany's defeat in the Great War and her expulsion from Kiao-chao, Japanese statesmen may well ask themselves whether the British alliance has not outlived its usefulness. Nothing is to be gained by disguising the fact that Japanese

friendship for Great Britain has perceptibly cooled in the last few years. This change of sentiment was strikingly revealed during the operations at Tsingtau in 1914. The German stronghold in Shantung was invested by a Japanese force, to which was attached a small contingent of British troops under General Barnardiston. As the first occasion on which British and Japanese had fought side by side against a common enemy, it was anticipated that this joint campaign would be attended with the happiest results. The truth is, however, that the whole business was marred by misunderstanding and recrimination, and though the facts were never officially published they gave rise to a great deal of acrid comment in the Japanese Press. British subjects who were resident in the Far East at the time unanimously agree that throughout the Great War Japanese opinion, official as well as popular, was decidedly sympathetic to Germany and antagonistic towards the Allies. In 1916, when the prospects of a German victory seemed to be good, the newspapers, with very few exceptions, launched a violent campaign against the Anglo-Japanese alliance and indulged in such vituperative language against Great Britain that the Government finally interfered. This episode showed that Japanese opinion had developed Anglophobe tendencies, a fact unfortunately confirmed by many later incidents. According to Mr. McGovern, all the military authorities, whatever their sympathies—and generally speaking naval circles were pro-British and the army people pro-German—had made up their minds that the Germans were going to win, or at least fight a drawn battle ; in fact, he adds, ' it was well known that the Government had made all preparations for

necessary action in case of a German victory.' Towards the close of 1917 a new Press campaign was opened, this time in favour of an alliance with the German Empire. The idea received particularly ardent support from those journals and magazines which enjoy a large circulation among the well-to-do and intellectual classes. Some of them went so far as to advocate a German-Russian-Japanese alliance, which, they maintained, could dominate the world; and this suggestion was in favour even after the revolution and defection of Russia.

No good purpose could be served by reproducing the violent attacks which Japanese periodicals of the highest standing saw fit to make upon Great Britain and the cause for which she was fighting. On the other hand, it is desirable that the British people should know of this significant change of feeling on the part of a nation which they have long been accustomed to regard and treat as a staunch friend. Any lingering doubts as to the political sentiments of the Japanese military caste will be dispelled by reading Colonel Ward's narrative of his experiences with the Siberian Expedition. But if the former cordial friendship between the two nations has given place, on one side at least, to distrust and veiled antipathy, it would be wrong to impute the change solely to Oriental caprice or perversity. Japan feels, not unreasonably, that if she were to become involved in a conflict arising out of the racial question, it would be vain to expect help from the British people; and since this issue is at the root of her quarrel with the United States she argues, with unassailable logic, that the British Empire can at best be only an unsympathetic neutral. She knows full well that her subjects are welcomed

as coldly in Canada and Australia as in the United States; and she does not forget that the first legislation to exclude Asiatic immigrants was enacted in a British Dominion as long ago as 1885. Hence the opposition manifested by her Press to the renewal of the Anglo-Japanese alliance on any but the original terms, which the altered circumstances have, of course, made inadmissible.

It is very true, as her publicists said in 1916, and have repeated many times since, that Japan must face the Pacific problem alone and solve it unaided. There is no reason to suppose that help would be forthcoming from China, for Japanese policy in that quarter has not been of a nature to gain her the goodwill of the Government or the people. It is far more likely that China would take advantage of a favourable opportunity to reassert in Manchuria and the Shantung Peninsula that sovereignty which the Japanese have done their best to overthrow. The statesmen of Tokyo must therefore reckon with China as a potential foe, or in any case as a neighbour whose neutrality would be the reverse of benevolent. Moreover, even within the Japanese Empire itself, there is a great deal of explosive material to which it would be dangerous to apply the torch of war. The Koreans, who have now been subjects of the Empire for eleven years, have never taken kindly to their Japanese masters, who still find it necessary to maintain a large force of troops and gendarmerie in order to repress the independence movement, which appears to be gaining ground. The last outbreak, which occurred in the spring of 1919, attained alarming dimensions, and was crushed with merciless severity. Owing to the strict censorship it is difficult to obtain reliable news of the present situation

in Korea, but the evidence of travellers indicates that popular unrest is increasing. This is not the place to comment on the methods by which Japan seeks to propagate her culture in the oversea territories she has acquired. All that need be said is that Japanese rule in Manchuria, Korea, and Formosa still rests upon bayonets, and that the possession of these territories not only adds nothing to her military power, but sensibly diminishes it.

There is, of course, an enormous disparity between the economic resources of the United States and the Japanese Empire, so much so that no question exists as to which could endure for longest the terrible burden of a great war. In 1918, the latest year for which figures are available, the population of the Continental United States was 105,250,000; that of Japan (excluding Korea and Formosa), 57,150,000. These figures, however, afford no true index to the relative position in regard to national wealth and productive capacity. The United States, although a great maritime Power by virtue of its long coastline, its sea-borne trade, and its naval armaments, is not dependent on sea communications for its existence. It is self-supporting in food and raw materials to a far greater extent than any other Power, with the possible exception of Russia. It could, for instance, raise, equip, and feed an army many millions strong without importing a ton of material from abroad. It has reserves of wealth which, if not boundless, are at any rate adequate to finance the longest and costliest war in which it is ever likely to be engaged. It has an industrial organisation which is capable of producing war material of every description in unlimited quantities. More than this, its people,

heterogeneous as they are, would be solidly behind the Government in any crisis which arose out of the Asiatic immigration question. Organised labour in America would regard war in such a cause as a crusade undertaken to vindicate its most cherished principles. Indeed, we have seen that the labour element has been foremost in demanding the erection of barriers against the Oriental immigrant. Japan would therefore find herself opposed by a united people, outnumbering her by two to one, and possessing resources tenfold greater than those which she commands.

In spite of all her industry, Japan remains relatively poor. A large part of the wealth she amassed during the Great War has already been mortgaged for the benefit of her armed forces. Her people are taxed to the limit of their endurance, yet the curve of expenditure goes steadily up. Her best friends, who entertain serious misgivings as to the economic future of Japan, are nevertheless satisfied that she will pull through, provided the temptation to embark upon further military adventures is resolutely resisted. What they fear is that the influence of the military caste, which looks upon war as a panacea for the social troubles which menace its supremacy, may be thrown into the scale of war. The members of this caste do not or will not see that war with the United States would be a very different affair from their previous wars with China and Russia; or, if they do appreciate the difference, they are confident that the issue would be the same. It has been shown in the preceding chapters that the present strategical conditions in the Western Pacific are favourable to Japan; but where her militarists go wrong is in assuming that the United States would

accept an initial reverse as final. If, as is all but certain, the struggle were to be protracted, no facile successes achieved in the beginning could avert the most ruinous consequences to the Island Empire. The United States could afford to wait; Japan could not. The inner history of the Russo-Japanese peace negotiations in 1905 has never been disclosed, but it is well known that Japan found it prudent to make peace—on terms none too favourable—at a moment when, to all appearances, she held every card in her hand. She was, in truth, at the end of her resources, with her reserves of man-power exhausted, her treasury empty, and her people war-weary to the point of active revolt. She had defeated Russia, only to be conquered in her turn by Time. War with the United States might well prove a matter of years, and to those most competent to judge the financial position of Japan the suggestion that her credit could stand the strain indefinitely is too absurd to be seriously discussed.

Nor is bankruptcy the only risk that would have to be faced. Within the past thirty years Japan has been transformed from an agricultural into an industrial community. The townward movement of the rural population has been especially marked in the last decade. Agriculture has proportionately declined, with the result that Japan no longer raises enough food for her own requirements, and is compelled to import a large and increasing proportion from foreign countries. This question of food supply was raised in the Diet during 1918, and in the same year the Government appointed a commission to investigate the possibilities of increasing the rice and bean crops. It is believed that by

employing modern methods and machinery, and extending the area of arable land by reclamation work, the rice crop could be increased by 20 per cent. This, however, is not likely to happen unless the Government is prepared to subsidise the farmers, who live in a chronic state of poverty and cannot afford to buy modern implements. Under present conditions the domestic production of food suffices for the needs of only four-fifths of the population, the remainder being dependent on imported supplies, mainly from Formosa, China, British India, and French Indo-China. These would be liable to interruption in time of war, and might be entirely cut off were the enemy able to establish a blockade from bases in the Philippines and the South Sea Islands. Moreover, it is estimated that the home supply of food would be reduced by at least one-fifth by the calling up of Army reservists. A prolonged war would inevitably result in a shortage of food, and might even bring about famine conditions. Popular distress would be aggravated by widespread unemployment, due to the suspension of foreign trade and the consequent closing down of factories which give work to nearly one and a half million men and women. A small proportion of these people would find employment in the munitions industry, but here the shortage of raw materials would soon make itself felt.

It is exceedingly doubtful whether Japan could provide arms, equipment, and other necessities for her naval and military forces on a war footing for a longer period than twelve months if foreign supplies of material ceased to be available. It is true that during the Great War upwards of 100,000 Japanese workpeople were engaged in the manufacture of

munitions and war equipment for the Allied Powers, but this activity was made possible only by the stocks of raw material which the Powers in question, and principally the United States, placed at the disposal of Japan. We have seen how, even in normal times, she is still largely dependent on foreign countries for her steel supply. The tremendous output of arms, ammunition, and maritime tonnage which formed such a notable chapter in the industrial history of Britain, Germany, and the United States during the Great War would be impossible in the case of Japan. By strictly rationing her limited stocks of steel and other essential material she might be able for a time to cope with the demands of her Navy and Army, but she would certainly not be in a position to embark, for instance, on a large emergency programme of naval construction. And concentration on the manufacture of war material would involve the virtual suspension of all other industrial activity. An economic crisis of the first magnitude would thus arise in any case, and the military party, by resorting to the desperate expedient of war as a means of averting social revolution, would be more likely to precipitate the very phenomenon they dread.

One would credit the people of Japan with too much intelligence not to perceive the dangers to which an aggressive foreign policy must expose their Empire. There are, however, unmistakable signs that wide circles of the nation have become imbued with the political doctrines of the Prussian school and hypnotised by the shibboleths which lured Germany to her ruin. The old cry of *Weltmacht oder Niedergang*—World Power or Downfall—has been taken up by the military caste, and

is echoed with equal or greater conviction by 'Intellectuals' and hard-headed men of business. The Press as a whole argues that the future welfare and prosperity of Japan depend to a far greater extent on the size of her armaments than on the encouragement of national thrift, industry, and sound administration. It favours also a 'bold' policy towards other Powers, and an uncompromising insistence on the right of Japan to turn the resources of China to her own exclusive advantage. A disturbing symptom is the unqualified support which the great Japanese business interests are giving to this so-called 'forward' policy. No newspapers are more bellicose in tone than those which circulate in the great industrial centres. The *Kensei-Kai*, a political party of extreme Nationalist views, which until very recently wielded a majority in the House of Representatives, is largely composed of business men. This was the party which, during the war period, led the campaign against the Anglo-Japanese Alliance and urged the conclusion of a naval and military agreement with Germany. Its newspapers have lately been using violent language towards the United States, though their vituperative efforts in this direction have been rivalled by the 'Independent organs,' such as the Tokyo *Yorodzu* and *Kokumin*. In view of the strict hold which the Government maintains over the Press, the significance of these outbursts cannot be dismissed as negligible. It is particularly surprising that the business interests of Japan should be found supporting a political programme which is calculated to foster international dissensions and may not impossibly lead to war, the disastrous results of which would fall most heavily upon them. The

only explanation that suggests itself is that they consider war to be less of an evil than the social cataclysm which many of them believe to be imminent. They have been assured by the military chiefs that war with the United States would be a short and decisive affair, ending in a sweeping victory for the arms of Japan, and leaving her in undisputed control of the Far East, its markets, and its untapped wealth. By similar arguments the German business interests were induced to throw in their lot with the Prussian war party, only to find, when too late, that they had compassed their own ruin and that of their Fatherland.

To foreign observers it seems that Japan has everything to lose and nothing to gain by a policy of aggressiveness. By sheer hard work and indomitable courage she has triumphed over the handicap of scanty natural resources and raised herself to a commanding position in the world. The problem of over-population has been solved in part by the annexation of Korea and Formosa, and of late years a new outlet, practically limitless in its possibilities, has been found in China. It is here, if anywhere, that Japan may realise her true destiny, and it is here that her claims for priority are less open to challenge than in any other quarter. There is plenty of room in China for all legitimate interests, and if Japan could bring herself to discard the methods she has borrowed from Prussia in favour of a policy of conciliation and genuine friendship with the Chinese people, she would eventually acquire in that quarter a predominance which could never be seriously contested. It remains to be seen whether her rulers and statesmen have sufficient

acumen to seize the unique opportunity thus presented to them instead of hazarding the fortunes of Dai Nippon in a militarist gamble more reckless even than that which caused the ruin of the German Empire.

APPENDIX I

THE UNITED STATES NAVY

Tables of Effective Ships, exclusive of Gunboats and Auxiliaries

Dreadnoughts

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1923-24	*South Dakota*	43,200	23	16-18 in.	12 16-in. 50 cal. 16 6-in. 53 cal. 4 3-in. A.A. 2 torpedo tubes.
1924	*Indiana*				
1924	*Montana*				
1924	*North Carolina*				
1923-24	*Iowa*				
1924	*Massachusetts*				
1922	*Colorado*	32,600	21	16-18 in.	8 16-in. 45 cal. 14 5-in. 51 cal. 4 3-in. A.A. 2 torpedo tubes.
1921	*Maryland*				
1922-23	*Washington*				
1923	*West Virginia*				
1920	*Tennessee*	32,300	21	14-18 in.	12 14-in. 50 cal. 14 5-in. 51 cal. 4 3-in. A.A. 2 torpedo tubes.
1921	*California*				
1918	*New Mexico*	32,000	21	14-18 in.	12 14-in. 50 cal. 14 5-in. 51 cal. 4 3-in. A.A. 2 torpedo tubes.
1917	*Mississippi*				
1919	*Idaho*				
1916	*Pennsylvania*	31,400	21	14-18 in.	12 14-in. 45 cal. 14 5-in. 51 cal. 4 3-in. A.A. 2 torpedo tubes.
1916	*Arizona*				
1916	*Nevada*	27,500	20½	13½-18 in.	10 14-in. 45 cal. 12 5-in. 51 cal. 2 3-in. A.A. 2 torpedo tubes.
1916	*Oklahoma*				
1914	*New York*	27,000	21	12-14 in.	10 14-in. 45 cal. 16 5-in. 51 cal. 2 3-in. A.A. 4 torpedo tubes.
1914	*Texas*				

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1912	*Wyoming*	26,000	21	11-12 in.	12 12-in. 50 cal. 16 5-in. 51 cal. 2 3-in. A.A. 2 torpedo tubes.
1912	*Arkansas*				
1911	*Florida*	21,825	22 21	11-12 in.	10 12-in. 45 cal. 16 5-in. 51 cal. 2 3-in. A.A. 2 torpedo tubes.
1911	*Utah*				
1910	*Delaware*	20,000	21½ 21	11-12 in.	10 12-in. 45 cal. 14 5-in. 51 cal. 2 3-in. A.A. 2 torpedo tubes.
1910	*North Dakota*				
1909	*Michigan*	16,000	18¾	11-12 in.	8 12-in. 45 cal. 12 3-in. 50 cal. 2 3-in. A.A. 2 torpedo tubes.
1909	*South Carolina*				

Battle Cruisers

1924	*Constellation*	43,500	33¼	6 in. (?)	8 16-in. 50 cal. 16 6-in. 53 cal. 4 3-in. A.A. 8 torpedo tubes.
1923	*Constitution*				
1924	*Lexington*				
1924	*Ranger*				
1923	*Saratoga*				
1923	*United States*				

Pre-Dreadnought Battleships

1906	*Connecticut*	16,000	18½	9-12 in.	4 12-in. 45 cal. 8 8-in. 45 cal. 12 3-in. 50 cal. 2 3-in. A.A. 4 torpedo tubes.
1906	*Louisiana*				
1907	*Kansas*				
1907	*Vermont*				
1908	*New Hampshire*				
1907	*Minnesota*				
1906	*Rhode Island*	14,948	19	11-12 in.	4 12-in. 40 cal. 8 8-in. 45 cal. 6 3-in. 50 cal. 2 3-in. A.A. 4 torpedo tubes.
1906	*Virginia*				
1906	*New Jersey*				
1906	*Georgia*				
1907	*Nebraska*				
1902	*Maine*	12,500	18	11-12 in.	4 12-in. 40 cal. 8 6-in. 50 cal. 2 3-in. A.A. 2 torpedo tubes.
1903	*Missouri*				
1904	*Ohio*				

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1900	*Alabama*	11,552	17	15-16½ in.	4 13-in. 35 cal. 8 6-in. 40 cal. 2 3-in. A.A.
1901	*Illinois*				
1901	*Wisconsin*				
	Monitors				
1902	*Ozark*	3,225	12 11½ 12½ 13	11-12 in.	2 12-in. 40 cal. 4 4-in. 50 cal. 1 3-in. A.A.
1902	*Cheyenne*				
1903	*Tonopah*				
1903	*Tallahassee*				
	Armoured Cruisers				
1906	*Seattle*	14,500	22	5-9 in.	4 10-in. 40 cal. 4 6-in. 50 cal. 12 3-in. 50 cal. 2 3-in. A.A. 4 torpedo tubes.
1908	*Charlotte*				
1908	*Missoula*				
1905	*Pueblo*	13,680	22¼	5-9 in.	4 8-in. 45 cal. *4 6-in. 50 cal. 10 3-in. 50 cal. 2 3-in. A.A. 2 torpedo tubes.
1905	*Pittsburgh*				
1905	*Huntington*				
1905	*Frederick*				
1907	*Huron*				
1905	*Charleston*	9,700	22	4 in.	12 6-in. 50 cal. 4 3-in. 50 cal. 2 3-in. A.A.
1906	*St. Louis*				
1893	*Rochester*	8,150	21	4-8 in.	4 8-in. 45 cal. 8 5-in. 50 cal. 2 3-in. A.A.
1896	*Brooklyn*	9,215	21·9	3-8 in.	8 8-in. 35 cal. 8 5-in. 40 cal. 2 3-in. A.A.
	Protected Cruisers				
1893	*Columbia*	7,350	23	4 in. deck	3 6-in. 45 cal. 4 4-in. 40 cal. 3 3-in. A.A.
1894	*Minneapolis*				
1894	*Olympia*	5,865	21½	4¾ in. deck	10 5-in. 51 cal. 2 3-in. A.A.
1889	*Chicago*	4,500	18	1½ in. deck.	4 5-in. 51 cal. 2 3-in. A.A.
1908	*Birmingham*	3,750	24·3 26·5 25·9	2 in. belt	4 5-in. 51 cal. 2 3-in. 50 cal. 1 3-in. A.A. 2 torpedo tubes.
1908	*Chester*				
1908	*Salem*				

* *Pittsburgh* and *Huron* have 14 6-in. guns.

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1921	*Omaha*	7,500	33·7	...	12 6-in. 53 cal.; 2 3-in. A.A.; 4 torpedo tubes.
1922	*Milwaukee*				
1922	*Cincinnati*				
1922	*Raleigh*				
1922	*Detroit*				
1923	*Richmond*				
1923	*Concord*				
1923	*Trenton*				
1923	*Marblehead*				
1923	*Memphis*				
1903	*Cleveland*	3,200	16½	2½ in. deck	8 5-in. 50 cal.; 6 6 pr.; 1 3-in. A.A.
1904	*Denver*				
1904	*Des Moines*				
1905	*Chattanooga*				
1905	*Galveston*				
1904	*Tacoma*				
1898	*Albany*	3,430	20	3½ in. deck	8 5-in. 50 cal.; 1 3-in. A.A.
1898	*New Orleans*				
	MINELAYERS				
1890	*Baltimore*	4,413	20	...	4 5-in. 51 cal.; 2 3-in. A.A.
1890	*San Francisco*	4,083	19½	...	5 5-in. 51 cal.; 2 3-in. A.A.
1908	*Aroostook*	3,800	20	...	1 3-in. A.A.
1908	*Shawmut*	3,800	20	...	1 3-in. A.A.
1919	*Anthony**	1,191	33½-35	...	3 or 4 4-in. 50 cal.; 2 3-in. A.A.
1919	*Burns*				
1919	*Hart*				
1919	*Ingraham*				
1918	*Israel*				
1918	*Lansdale*				
1918	*Luce*				
1918	*Ludlow*				
1918	*Mahan*				
1918	*Maury*				
1918	*Murray*				
1919	*Rizal*				
1919	*Sproston*				
1918	*Stribling*				

* These fourteen vessels were built as destroyers, and have been converted into light minelayers by the removal of their torpedo tubes and the fitting of mine tramways and chutes. Reported that three further destroyers, *Ward*, *Zane*, and *Jacob Jones*, are to be similarly converted.

DESTROYERS.

295 First-class Boats, the majority completed 1918-20:—*Abbot, Alden, Allen,* Aulick, Ausburn, Aylwin,* Babbitt, Badger, George E. Badger, Bagley, Bailey, Bainbridge, Balch,* Ballard, Bancroft, Barker, Barney, Barry, Belknap, Bell, Benham,* Bernadou, Biddle, Billingsley, Blakeley, Boggs, Borie, Branch, Breck, Breckinridge, Breese, Brooks, Broome, Bruce, Buchanan, Bulmer, J. F. Burnes, Bush, Caldwell,* Case, Cassin,* Champlin, Chandler, Chase, Chauncey, Chew, Childs, Claxton, Clemson, Coghlan, Cole, Colhoun, Conner,* Converse, Conyngham,* Cowell, Crane, Craven,* Crosby, Crowninshield, Cummings,* Cushing,* Dahlgren, Dale, Dallas, Davis,* Decatur, De Long, Delphy, Dent, Dickerson, Dorsey, Downes,* Doyen, Duncan,* Du Pont, Dyer, Edsall, Edwards, John D. Edwards, Elliot, Ellis, Ericsson,* Evans, Fairfax, Farquhar, Farragut, Flusser, Foote, Ford, Fox, Fuller, Gamble, Gillis, Gilmer, Goff, Goldsborough, Graham, Greene, Greer, Gregory, Gridley, Gwin,* Hale, Hamilton, Paul Hamilton, Haraden, Harding, Hatfield, Hazelwood, Henshaw, Herbert, Herndon, Hogan, Hopewell, Hopkins, Hovey, Howard, Hulbert, Hull, Humphreys, Hunt, Ingram, Isherwood, James, Jacob Jones, Paul Jones, William Jones, Kalk, Kane, Kennedy, Kennison, Kidder, Kilty, Kimberly, King, Lamberton, Lamson, Lardner, Laub, La Vallette, Lawrence, Lea, Leary, S. P. Lee, Litchfield, Little, Long, MacDonough, MacKenzie, MacLeish, Maddox, Manley,* Marcus, Mason, McCalla, McCawley, McCook, McCormick, McDermut, McDougal,* McFarland, McKean, McKee, McLanahan, Meade, Meredith, Mervine, Meyer, Montgomery, Moody, Morris, Mugford, Mullany, Nicholas, Nicholson,* Noa, O'Bannon, O'Brien,* Osborne, Overton, Palmer, Parker,* Parrott, J. K. Paulding, Peary, Percival, Perry, Philip, Pillsbury, Pope, Porter,* Preble, Preston, William B. Preston, Pruitt, Putnam, Radford, Ramsay, Rathburne, Reid, Reno, Renshaw, Ringgold, Robinson, Rodgers, Roper, Rowan,* Sampson,* Sands, Satterlee, Schenck, Schley, Selfridge, Semmes, Sharkey, Shaw,* Shirk, Shubrick, Sicard, Sigourney, Simpson, Sinclair, Sloat, Robert Smith, Somers, Southard, Stansbury, Stevens, Stewart, Stockton,* Stoddert, Stringham, Sturtevant, Sumner, Swasey, Talbot, J. F. Talbott, Tarbell, Tattnall, Taylor, Thatcher, Thomas, Thompson, Smith Thompson, Thornton, Tillman, Tingey, Toucey, Tracy, Trever, Truxtun, Tucker,* Turner, Twiggs, Upshur, Abel P. Upshur, Wadsworth,* Wainwright,* Walker, Ward, Aaron Ward, Wasmuth, Waters, Welles, Whipple, Wickes, Wilkes,* Williams, Williamson, Winslow,* Wood, Welborn C. Wood, Woodbury, Worden, Yarborough, Yarnall, Young, Zane, Zeilin, No. 332, No. 334, No. 335*, and twelve boats authorised but not yet under construction.

Boats marked with an asterisk are of an earlier type, completed 1915-17, displacement 1040 to 1125 tons, speeds 29 to 32 knots,

armed with four or five 4-in. guns and eight to twelve torpedo tubes.

All the rest belong to the so-called 'flush-deck' type, completed 1918 to 1921, displacement 1150 to 1215 tons, designed speed 35 knots, armed with four 4-in. guns and twelve torpedo tubes. Practically all U.S. destroyers carry one 3-in. short anti-aircraft gun.

21 Second-class Boats.—*Ammen, Beale, Burrows, Drayton, Fanning, Henley, Jarvis, Jenkins, Jouett, Moyrant, McCall, Monaghan, Patterson, Paulding, Perkins, Roe, Sterett, Terry, Trippe, Walke, Warrington.* Completed 1910-12. Displacement, 883 to 893 tons, speeds, 29½ to 32 knots, armed with six torpedo tubes. These boats carry no guns at present.

Submarines.

9 Ocean-going Boats (V 1-9), building or projected. Displacement 2000 tons, surface speed 22 knots. No other details.

3 Ocean-going Boats (T 1-3), completed 1920-21. Displacement 1100 tons, surface speed of 20 knots. Cruising endurance 7000 miles. Armed with four torpedo tubes and two 3-in. guns.

51 Ocean-going Boats (S 1-51), completed 1919-21. Displacement 800-850 tons, surface speed 14 to 16 knots. Cruising endurance 5000 miles. Armed with four torpedo tubes and one 3-in. gun.

27 Coastal Boats (R 1-27), completed 1918-19. Displacement 495 to 569 tons, surface speeds 13½ to 14 knots. Cruising endurance 3500 to 4000 miles. Armed with four torpedo tubes and one 3-in. 50 calibre gun.

16 Coastal Boats (O 1-16), completed 1918. Displacement 485 to 520 tons, surface speed 14 knots. Cruising endurance 5000 miles. Armed with four torpedo tubes and one 3-in. gun.

9 Coastal Boats (K 1-8 and L 1), completed 1914-16. Displacement 392 to 450 tons, surface speed 14 knots. Cruising endurance 4500 miles. Armed with four torpedo tubes. (L 1 has a 3-in. gun.)

10 Coastal Boats (L 2-11), completed 1916-18. Displacement 450 tons, surface speed 14 knots. Cruising endurance 4500 miles. Armed with four torpedo tubes and one 3-in. gun.

8 Coastal Boats (H 2-9), completed 1913-18. Displacement 357-358 tons, surface speed 12¾ to 14 knots. Cruising endurance 2500 miles. Armed with four torpedo tubes.

1 Coastal Boat (M 1), completed 1918. Displacement 488 tons, surface speed 14 knots. Cruising endurance 3000 miles. Armed with four tubes and one 3-in. gun.

7 Coastal Boats (N 1-7), completed 1917-18. Displacement 331 to 347 tons, surface speed 13 knots. Cruising endurance 2500 miles. Armed with four torpedo tubes.

9 Coastal Boats (D 1-3, E 1-2, F 2-3, G 1, G 3), 1909-1913. Displacement 287 to 400 tons, surface speed 13 to 14 knots. Cruising endurance 2000 miles. Armed with four torpedo tubes. (G 1 and G 3 have six tubes each.)

4 Coastal Boats (A 3, A 5, B 1, B 3), completed 1903-1907. Displacement 106 to 145 tons, surface speed 8½ to 9 knots. Cruising endurance 1500 miles. First two armed with one torpedo tube, second two with two tubes.

Patrol Vessels.

33 'Eagle' Boats, completed 1918-19. Displacement 500 tons, speed 18 knots. Armed with two 4-in. 50 cal. guns, one 3-in. A.A. gun.

79 Submarine Chasers, completed 1917-19. Displacement 77 tons, speed 18 knots. Armed with one 3-in. 23 cal. gun.

APPENDIX II

THE IMPERIAL JAPANESE NAVY

Tables of Effective Ships, exclusive of Gunboats and Auxiliaries

Dreadnoughts

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1923-24	*Owari*	*45,000	23	...	12 16-in. 50 cal. *or* 8 18-in. 45 cal. 20 5·5-in. 50 cal.
1923-24	*Kii*				
1924	'C'				
1924	'D'				
1923	*Kaga*	40,600	23	14 in.	10 16-in. 50 cal. 20 5·5-in. 50 cal. 8 torpedo tubes.
1922-23	*Tosa*				
1921	*Nagato*	33,800	23	12 in.	8 16-in. 45 cal. 20 5·5-in. 50 cal. 8 torpedo tubes.
1921	*Mutsu*				
1917	*Ise*	31,260	23	12 in.	12 14-in. 45 cal. 20 5·5-in. 50 cal. 6 torpedo tubes.
1918	*Hiuga*				
1915	*Fuso*	30,600	22	12 in.	12 14-in. 45 cal. 16 6-in. 50 cal. 6 torpedo tubes.
1917	*Yamashiro*				
1912	*Settsu*	21,420	20½	12 in.	12 12-in. 45 and 50 cal. 10 6-in. 50 cal. 8 4·7 in. 50 cal. 5 torpedo tubes.

Battle Cruisers

1924	'A'	*46,000	34	...	8 18-in. 45 cal. 16 6-in. 50 cal. 8 torpedo tubes.
1924	'B'				
1924-25	'C'				
1924-25	'D'				

* Details of these vessels are conjectural, and cannot be confirmed.

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1923	*Amagi*	43,500	33	...	8 16-in. 50 cal. 20 5·5-in. 50 cal. 8 torpedo tubes.
1923	*Akagi*				
1923	*Atago*				
1923	*Takao*				
1913	*Kon-go*	27,500 to 27,613	27½	8-10 in.	8 14-in. 45 cal. 16 6-in. 50 cal. 8 torpedo tubes.
1914	*Hi-yei*				
1915	*Haruna*				
1915	*Kirishima*				

Pre-Dreadnought Battleships

1910	*Aki*	19,800	20	9 in.	4 12-in. 45 cal. 12 10-in. 45 cal. 8 6-in. 45 cal. 5 torpedo tubes.
1910	*Satsuma*	19,350	18¼	9 in.	4 12-in. 45 cal. 12 10-in. 45 cal. 12 4·7 in. 45 cal. 5 torpedo tubes.
1906	*Kashima*	16,400	18½	9 in.	4 12-in. 45 cal. 4 10-in. 45 cal. 12 6-in. 45 cal. 5 torpedo tubes.
1906	*Katori*	15,950			
1901	*Mikasa*	15,362	18	9-14 in.	4 12-in. 45 cal. 14 6-in. 45 cal. 4 torpedo tubes.
1904	*Iwami*	13,516	18	7½-10 in.	4 12-in. 45 cal. 6 8-in. 45 cal. 3 torpedo tubes.
1902	*Hizen*	12,700	18	9-10 in.	4 12-in. 40 cal. 12 6-in. 45 cal. 2 torpedo tubes.
1902	*Suwo*	13,500	18	9-10 in.	4 10-in. 45 cal. 10 6-in. 45 cal. 2 torpedo tubes.
1900	*Asahi*	14,765	18	9-14 in.	4 12-in. 40 cal. 14 6-in. 40 cal. 4 torpedo tubes.
1900	*Shikishima*	14,580			

Armoured Cruisers

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1909	*Kurama*	14,600	21¼	7 in.	4 12-in. 45 cal. 8 8-in. 45 cal. 14 4·7 in. 50 cal. 3 torpedo tubes.
1910	*Ibuki*		22		
1907	*Ikoma*	13,750	20½	7-9 in.	4 12-in. 45 cal. 10 6-in. 45 cal. 8 4·7-in. 50 cal. 3 torpedo tubes.
1904	*Nisshin*	7,750	20	6 in.	4 8-in. 45 cal. 14 6-in. 45 cal. 4 torpedo tubes.
1904	*Kasuga*				
1902	*Aso*	7,800	21	8 in.	2 8-in. 45 cal. 8 6-in. 45 cal. 2 torpedo tubes.
1901	*Idzumo*	9,750	21	7 in.	4 8-in. 40 cal. 14 6-in. 40 cal. 4 torpedo tubes.
1901	*Iwate*				
1901	*Adzuma*	9,426	21	7 in.	4 8-in. 40 cal. 12 6-in. 40 cal. 4 torpedo tubes.
1901	*Yakumo*	9,735	20½	7 in.	4 8-in. 40 cal. 12 6-in. 40 cal. 4 torpedo tubes.
1899	*Asama*	9,700	21½	7 in.	4 8-in. 40 cal. 14 6-in. 40 cal. 4 torpedo tubes.
1899	*Tokiwa*				

Light Cruisers

1923	*Ayase*	No details of these ships known. May comprise several different types. Have been variously reported as of 5,500-7,500 tons, 34 knots, with 5·5-in., 6-in., or 8-in. guns.
1923	*Otonase*	
1924	*Abukuma*	
1924	*Kinu*	
1923	*Minase*	
1924	'A'	
1924	'B'	
1924	'C'	
1924	'D'	
1924	'E'	
1924	'F'	
1924	'G'	

Year of Completion.	Name.	Displacement in tons.	Designed Speed. Knots.	Armour over Vital Parts.	Armament.
1923	*Yura*	6,000	33½	...	8 6-in. or 5·5-in. 8 torpedo tubes.
1923	*Isudzu*				
1922	*Nagara*				
1922	*Natori*				
1920	*Kuma*	5,500	33	2 in.	7 5·5-in. 50 cal. 6 torpedo tubes.
1920	*Tama*				
1921	*Kiso*				
1921	*Kitakami*				
1921	*Oh-i*				
1919	*Tenryu*	3,500	31	1½ in.	4 5·5-in. 50 cal. 6 torpedo tubes.
1919	*Tatsuta*				
1912	*Chikuma*	4,950	26	3-in. deck	8 6-in. 50 cal. 3 torpedo tubes.
1912	*Yahagi*				
1912	*Hirado*				
1909	*Tone*	4,105	23	3-in. deck	2 6-in. 50 cal. 10 4·7-in. 50 cal. 3 torpedo tubes.
1903	*Niitaka*	3,420	20	2½-in. deck	6 6-in. 40 cal.
1903	*Tsushima*				
1899	*Chitose*	4,992	22½	4½-in. deck	2 8-in. 40 cal. 10 4·7-in. 40 cal. 4 torpedo tubes.
1898	*Akashi*	2,800	19½	2-in. deck	2 6-in. 40 cal. 6 4·7-inch 40 cal. 2 torpedo tubes.
1896	*Suma*	2,700	20		

Minelayers.

1 Armoured Cruiser *Aso* (*q.v.*) has been converted into a minelayer.

1 Protected Cruiser *Tsugaru*, completed 1901. Displacement 6630 tons, speed 20 knots. Present armament doubtful. Reported as being fitted to carry 300 mines.

Various Light-Cruisers, including *Tatsuta* and *Tenryu*, reported to have mine tramways and chutes; also several destroyers.

2 New Minelayers, building or projected. Said to be of 20 knots speed; no other details known.

1 Minelayer, *Katsuriki*, completed 1917. Displacement 2000 tons, speed 13 knots; armed with two 12-pr. guns. 100 mines.

12 Minelayers, completed 1911-20. *Natsushima*, *Sokuten*, *Kuroshima*, *Toshima*, *Ashizaki*, *Katoku*, *Kurokami*, *Katashima*, *Yento*, *Yenoshima*, *Ninoshima*, *Kurosaki*. Displacement 430 tons, speed 12 knots. Mine capacity, 50 to 60.

DESTROYERS.

16 First-class Boats, building or projected. Probably completed in 1922-23. No details known.

13 First-class Boats, completed 1921-22. *Akikaze*, *Yukaze*, *Hokaze*, *Shiokaze*, *Tachikaze*, *Nokaze*, *Numakaze*, *Namikaze*, *Okaze*, *Makaze*, *Tsumujikaze*, *Soyokaze*, *Suzukaze*. Displacement 1900-2200 tons, speed 36 knots, armed with four 5·5 in. or five 4·7 in. guns and six torpedo tubes.

7 First-class Boats, completed 1919-20. *Sawakaze*, *Minekaze*, *Yokaze*, *Hakaze*, *Okikaze*, *Shimakaze*, *Nadakaze*. Displacement 1345 tons, speed 34 knots, armed with four 4·7 in. guns and six torpedo tubes.

2 First-class Boats, completed 1918-19. *Kawakaze* and *Tanikaze*. Displacement 1300 tons, speed 34 knots, armed with three 4·7-in. guns and six torpedo tubes.

4 First-class Boats, completed 1917. *Amatsukaze*, *Isokaze*, *Hamakaze*, *Tokitsukaze*. Displacement 1227 tons, speed 34 knots, armed with four 4·7-in. guns and six torpedo tubes.

2 First-class Boats, completed 1911-12. *Umikaze* and *Yamakaze*. Displacement 1150 tons, speed 31½ knots, armed with two 4·7-in. and five 12-pr. guns, and three or four torpedo tubes.

21 Second-class Boats, building or projected. Probably completed in 1922-23. No details known.

26 Second-class Boats, completed 1921-22. *Basho*, *Kaido*, *Kakitsubata*, *Tsutsuji*, *Karukaya*, *Kikyo*, *Omodaka*, *Yuri*, *Ayame*, *Botan*, *Ajisai*, *Nadeshiko*, *Shion*, *Ashi*, *Hasu*, *Hishi*, *Sumire*, *Tade*, *Tsuta*, *Warabi*, *Yomogi*, *Fuji*, *Kiku*, *Susuki*, *Ao-i*. Displacement about 900 tons, speed 33 knots, armed with three 4·7-in. guns and four (or six) torpedo tubes.

8 Second-class Boats, completed 1919-20. *Momi*, *Take*, *Nashi*, *Kaki*, *Tsuga*, *Kaya*, *Kure*, *Nire*. Displacement 850 tons, speed 31½ knots, armed with three 4·7-in. guns and four torpedo tubes.

10 Second-class Boats, completed 1917-19. *Kashi*, *Hinoki*, *Momo*, *Yanagi*, *Tsubaki*, *Nara*, *Enoki*, *Maki*, *Keyaki*, *Kuwa*. Displacement 835 tons, speed 31½ knots, armed with three 4·7-in. guns and six torpedo tubes.

10 Second-class Boats, completed 1915. *Matsu*, *Kaba*, *Kaede*, *Kashiwa*, *Katsura*, *Kiri*, *Kusunoki*, *Ume*, *Sakaki*, *Sugi*. Displacement 665 tons, speed 30 knots, armed with one 4·7-in. and four 12-pr. guns, and four torpedo tubes.

1 Second-class Boat, completed 1915. *Urakaze*. Displacement 955 tons, speed 28 knots, armed with one 4·7-in. and four 12-pr. guns, and four torpedo tubes.

2 Second-class Boats, completed 1912. *Sakura* and *Tachibana*. Displacement 605 tons, speed 30 knots, armed with one 4·7-in. and four 12-pr. guns, and four torpedo tubes.

42 Third-class Boats, completed 1899-1909. *Akebono*, *Oboro*, *Kagero*, *Shiranui*, *Usugumo*, *Asashiho*, *Shirakumo*, *Murasame*, *Asagiri*, *Ariyake*, *Yayoi*, *Wakaba*, *Ushiho*, *Nenohi*, *Kisaragi*, *Kamikaze*, *Hatsushimo*, *Fukuki*, *Arare*, *Hibiki*, *Hatsuyuki*, *Yugure*, *Yudachi*, *Nowaki*, *Mikadzuki*, *Harukaze*, *Asakaze*, *Udzuki*, *Shigure*, *Hatsuharu*, *Hayate*, *Shiratsuya*, *Shirayuki*, *Minadzuki*, *Matsukaze*, *Nagatsuki*, *Kikudzuki*, *Yunagi*, *Oite*, *Uranami*, *Isonami*, *Ayanami*. Displacement 306 to 381 tons, speed 29 to 31 knots; majority armed with six 12-pr. guns and two torpedo tubes, but earlier boats mount two 12-pr. and four 6-pr. guns.

Submarines.

30 Ocean-going Boats, building or projected. No details known, but reported to include several large submersible cruisers and minelayers.

8 Ocean-going Boats, building, to be completed 1922. Displacement 1900 to 2300 tons, surface speed 17 knots, armed with one or two 5·5-in. guns and six torpedo tubes. (Some of these boats may be minelayers.)

7 Ocean-going Boats, completed 1922 (Nos. 44-50). Displacement 1250 tons, surface speed 16-17 knots, cruising endurance 11,000 miles, armed with one 5·5-in. gun and four torpedo tubes.

16 Ocean-going Boats (Nos. 27-43), completed 1921-23. Displacement 1100 tons, surface speed 17 knots, cruising endurance 11,000 miles, armed with one gun and six torpedo tubes.

2 Ocean-going Boats (Nos. 25 and 26), completed 1920. Displacement 950 to 1000 tons, surface speed 16½ knots, cruising endurance 7500 miles, armed with one gun and four torpedo tubes.

3 Ocean-going Boats (Nos. 22-24), completed 1919-20. Displacement 950 tons, surface speed 16 knots, cruising endurance 6500 miles, armed with one gun and five torpedo tubes.

3 Ocean-going Boats (Nos. 14, 19, 20), completed 1918. Displacement 890 tons, surface speed 16 knots, cruising endurance 6500 miles, armed with one gun and five torpedo tubes.

2 Ocean-going Boats (Nos. 18 and 21), completed 1918-19. Displacement 980 tons, surface speed 17 knots, cruising endurance 3000 miles, armed with four torpedo tubes.

1 Ocean-going Boat (No. 15), completed 1914. Displacement 665 tons, surface speed 17 knots, cruising endurance 2200 miles, armed with six torpedo tubes.

2 Coastal Boats (Nos. 16 and 17), completed 1919. Displacement 290 tons, surface speed 13 knots, cruising endurance 2000 miles, armed with four torpedo tubes.

6 Coastal Boats (Nos. 8-13), completed 1909-12. Displacement 285-300 tons, surface speed 13-14 knots, cruising endurance 1000 to 1300 miles, armed with two torpedo tubes.

2 Coastal Boats (Nos. 6 and 7), completed 1908. Displacement 62 tons, surface speed $8\frac{1}{2}$ knots, cruising endurance 500 miles, armed with one torpedo tube.

5 Coastal Boats (Nos. 1-5), completed 1905-6. Displacement 105 tons, surface speed 9 knots, cruising endurance 500 miles, armed with one torpedo tube.

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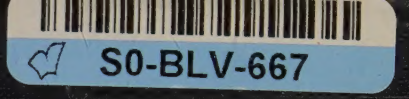
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